American FRUIT GROWER

OCTOBER 1947

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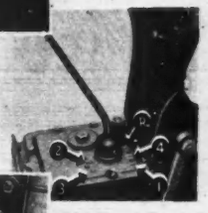

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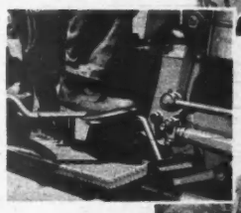

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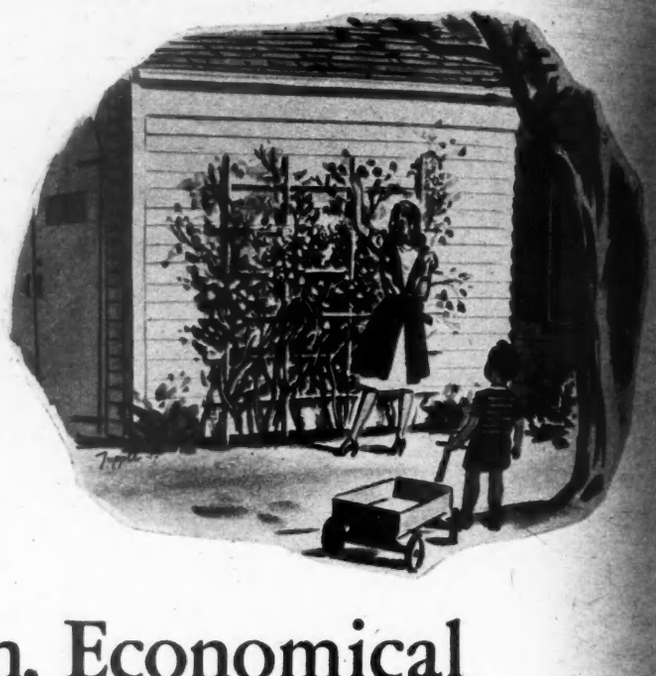

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OCTOBER 1947
VOL. 67 No. 10

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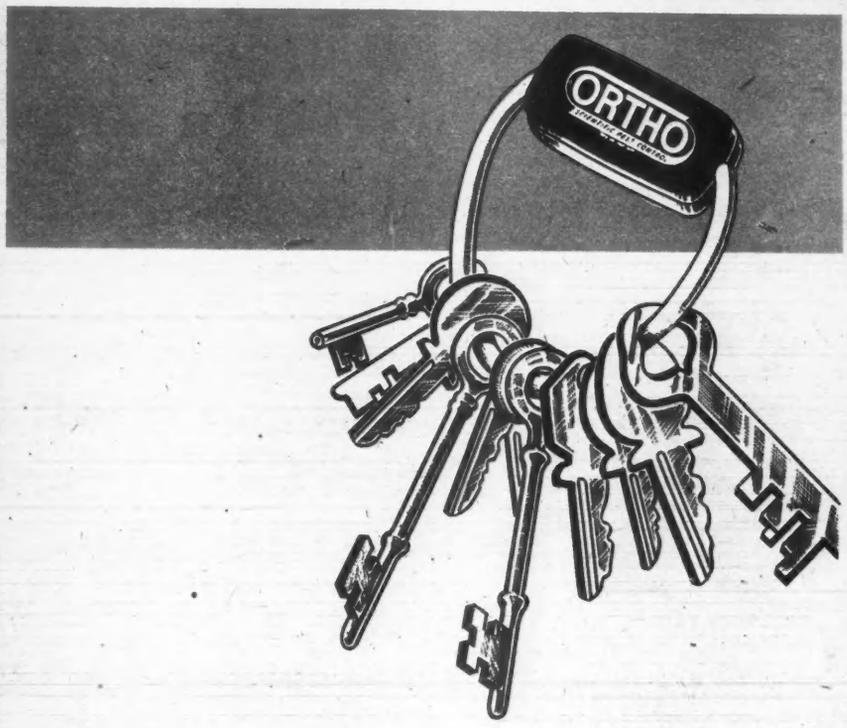

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In fruit growing, so many things can happen!
Sometimes suddenly, often unexpectedly.
A season's vagaries often call for quick variation
of a well-planned year's spray program.

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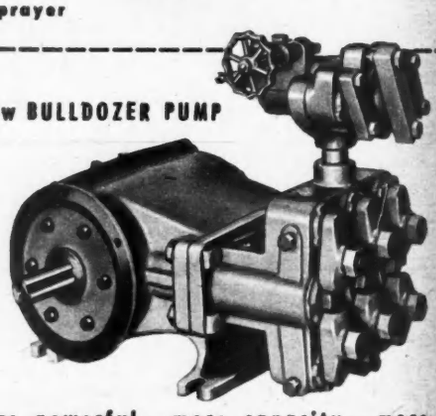

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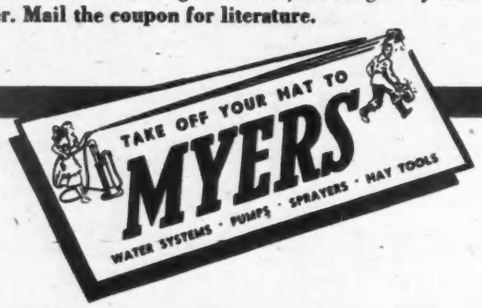

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LETTERS TO THE EDITOR

Where's Huckleberry Finn?

Dear Sir:

I have always understood, from Federal as well as State Bulletins, that the small wild blue berried bushes growing mostly in the eastern and central north states are Huckleberries, and that the taller and larger berried ones were the Blueberries. I also read that, outside of size, the difference between the two sorts were in the number of seeds they contained, the Blueberries having practically no seeds and the Huckleberries many. I was therefore surprised to see in your April issue you called the little low bushes "Blueberries." From the looks in the photograph and the way they were harvested I would call them Huckleberries. Isn't it about time we got together and standardized names.

Doniphan, Mo. H. Henshall

Huckleberries and Blueberries, as well as Deerberries, Whortleberries and Dangleberries, to name a few, are easily confused. Reader Henshall is correct in saying that the prominent seeds in the Huckleberry distinguish it from the Blueberry, but the height of the bush is not a distinguishing feature as either berry may be high or low. The berry described by Author Hitz in the April issue of AMERICAN FRUIT GROWER *is correctly called the low-bush Blueberry. Identification can be made for certain by the number of hard seeds in the fruit and also by the greater number of dots on the huckleberry leaves.—Ed.*

Cassberries?

Gentlemen:

I have found that red raspberry plants do not succeed on the California Pacific coast, but that the Cassberry, which I take to be a relative of the raspberry, does well here. The plant has red berries and yields extremely well. All I can find out is that it was developed by Burbank. Can the AMERICAN FRUIT GROWER tell me any more?

Morro Bay, Calif. Yvonne K. Navas-Rey

The Cassberry is not listed among the creations of Luther Burbank, and we find no mention of it in horticultural literature. Who can tell us about this fruit?—Ed.

Pruning: Fall or Spring?

Dear Sirs:

Please advise if it is harmful to prune fruit trees such as peach, cherry, apricot, plum and apple in autumn after the crop is picked.

Nelson, B.C., Can. George A. Hennessy

Gentlemen:

I have an orchard of 600 eight-year-old apple trees, and I usually prune them in March. However, it is usually very cold and windy at that time, and I have thought of pruning them in late October or early November this time. Would there be any harm done to the trees by this fall pruning?

Manito, Ill. Rudolph H. Rohlfs

Whether pruning is best done in the spring or in the fall is a question which must be decided by each grower, depending upon the climate and upon his experience with the varieties he is growing. It is true that fall pruning may be accomplished under more pleasant weather conditions but there are dangers in pruning before freezing weather.

It has been proved by experience that fall-pruned trees can be killed by winter cold while unpruned trees will survive with little damage. In any event, wounds caused by pruning are very easily damaged by cold winter temperatures. Wounds heal more quickly if they are made in the spring shortly before the tree begins rapid growth.

With peaches, which are subject to bud-killing by low winter temperatures, it may be advisable to wait until spring. Pruning can then be adapted to fit the amount of bud injury—relatively heavy if no buds have been killed and relatively light if many have been killed.—Ed.

Reader Invents Mechanical Picker

Dear Sir:

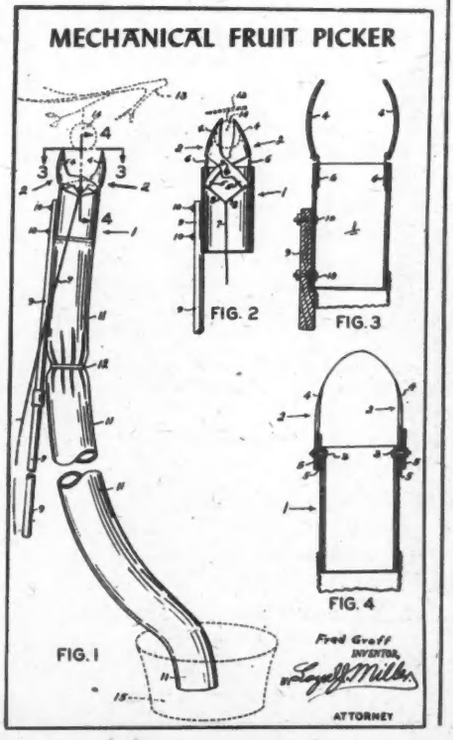
I am sending you a drawing of a new type of fruit picker that I have invented, hoping that it will be of interest to your readers.

Fig. 1 shows the whole unit except the air compressor which is used to operate it. The fruit is grasped and picked by the air-operated jaws, then it slides down the canvas tube into a container. Elastic bands are placed around the tube every four feet to slow down the fruit so that it won't be bruised as it drops.

Each unit is operated on a pole which can be of varying lengths. A 4-foot pole is sufficient to pick all fruit from ground level to a height of 10 feet. In a large orchard, as many as six units can be operated from one compressor.

Edmond, Okla. Fred Groff

It has often been said that the fruit grower's only salvation for lower costs is a mechanical picker. Oh boy, if this works! —Ed.



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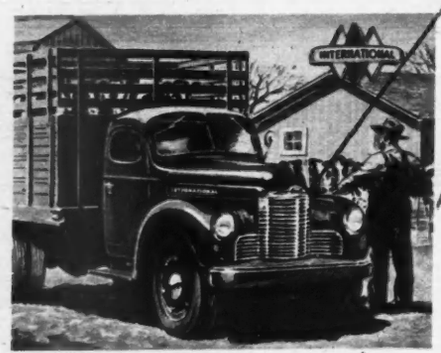

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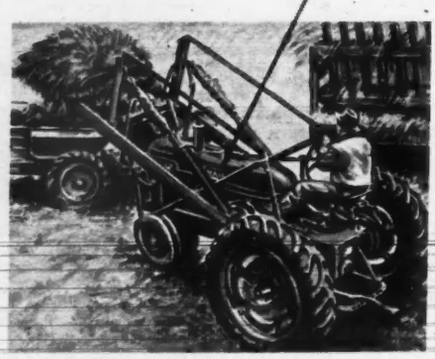

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A company dedicated, since its beginning, to the progress of agriculture, to a better way of life for the men, women and children who live and work on the six million farms of these United States.

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Excellence of product now, with *greater* excellence always in preparation for the future.

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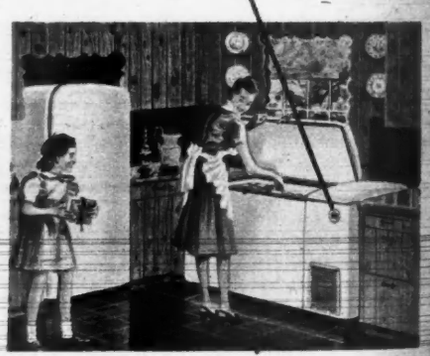


REFRIGERATION—Beautifully designed, efficient . . . new International Harvester Refrigeration brings new leisure and convenience particularly to the rural homemakers of America.

A McIntosh tree with a severely winter-injured trunk.

Richared Delicious on Virginia Crab, an excellent stock-scion combination, with wide-angled scaffold limbs.

FIGHT WINTER-KILL

With Hardy Apple Stocks

Forty-five Different Stocks Undergoing Tests

By M. T. Hilborn, *Maine Experiment Station*

THE PRESENT revival in the use of hardy trunk-forming apple stocks is a result of the disastrous freeze of 1933-34. At that time the more tender varieties such as Baldwin, Spy, and Delicious were severely injured, and during the following years an equally serious injury became apparent in such varieties as McIntosh and Cortland. Here the trunks and occasionally the crotches of the main scaffold branches had been winter-injured but the full extent of this injury did not appear until two or three years afterwards. Then trees began to appear less thrifty, some died, and others slowly declined over a period of years, always being weak and less fruitful than uninjured trees. Occasionally McIntosh trees were brought back into good production by considerable effort on the part of the orchardist in bridge-grafting and inarching the injured portions on the trunk and scaffold limbs.

At least as early as 1867, Maine orchardists had noted the benefits of top-working a tender variety onto a hardier sort, and in 1899 the Maine Pomological Society published a list of recommended stocks for use as trunk-formers. But orchardists in general were slow in adopting this practice, not only because of the extra work involved but also because of the uncertainty of the results. It was common practice in that early period to use wild seedlings, and stock-scion incompatibilities as well as variability in stock hardiness tended to discourage the orchardist. These disadvantages have now been largely overcome by using only named varieties as trunk-forming stocks so that the orchard performance of any particular stock-scion combination is known and can be used with confidence.

In the early 1920's Maine as well as other New England States began to change over from producing Ben Davis, Baldwin, and Stark to McIntosh, and many orchards were top-worked to this variety. When the severe winter of 1933-34 came along it was found that some stock-scion combinations showed greater hardiness than others. McIntosh when top-worked onto some stocks escaped the trunk-injury that caused severe loss to ordinary McIntosh trees. Baldwin trunks top-worked to McIntosh came through the winter

(*Continued on page 22*)

Gravenstein on Virginia Crab, an incompatible graft union.

Cortland on Tayezhnoie, a graft union that seems to be compatible.

Northern Spy on Tayezhnoie, an incompatible graft union.

Macoun on M IV, ten years old. The tree shows a tendency to lean because of weak roots.

Northern Spy on M 1, ten years old. These are in their second year of fruiting.

THE LOW-DOWN On Dwarf Apple Trees

W. W. SMITH, *University of New Hampshire*

THAT THE quest is still on for a smaller apple tree was evidenced at the recent fruitstock meetings at Vineland, Ontario, August 6 and 7, 1947. Many representatives present from State, Provincial and Dominion horticultural experiment stations told of intensive studies being made of fruitstocks and particularly of rootstocks, with the production of smaller trees for commercial apple growers as an objective.

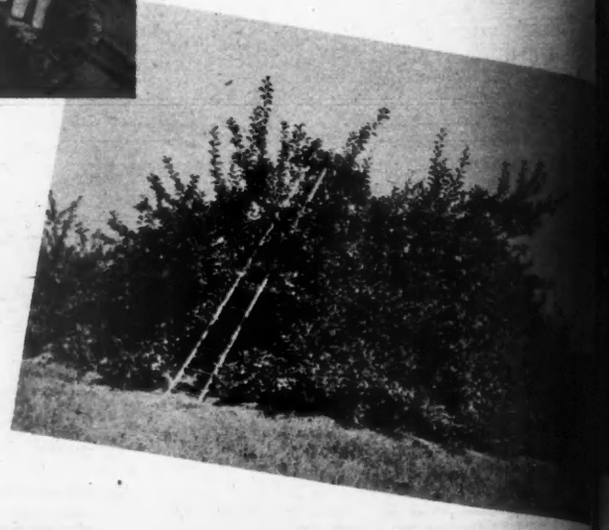
That smaller trees would meet the more pertinent needs of many fruit growers is obvious. Dr. H. B. Tukey, in an article in the AMERICAN FRUIT GROWER, February, 1944, listed the advantages of dwarfed trees as follows:

"Earlier fruiting.
Larger number of trees per acre.
Easier and more economical raising of young trees and removal of older trees in the rotation orchard system.
Better adaptation to local environment.
Improvement of quality of fruit through better opportunity for coloring, for spot picking, for tree ripening, for freedom from insects and disease blemishes, for thinning, for reduction in bruising and for reduction in number of culls."

Although some of these advantages may be attained by newly developed horticultural practices and better spray equipment, it is generally agreed that smaller trees would be a shortcut to solving many an orchardist's problems. Opinion varies as to how much smaller trees should be. Some apple growers are asking for trees nearly full-standard size. Standard trees are those grown on seedling roots, such as we normally get from nurseries. Some are asking for half-standard size; others, particularly growers in the northeast, would prefer two-thirds-standard sized trees, that is about the size of the Winter Banana as it grows in New Hampshire. Such dwarfed trees could be picked at maturity, at thirty years of age, with a 16 foot ladder and could be grown at 30 foot spacings. Many of our present Northern Spy and McIntosh trees need 50 foot spacings and a 30 foot ladder to harvest the fruit.

The hope for a smaller apple tree was kindled about 30 years ago when Dr. R. G. Hatton and his associates of the East Malling Experiment Station, England, segregated and classi-

Trees on M IX need support. When its supporting stake broke this tree snapped at the graft union.



Right—The Winter Banana on seedling roots is of a desirable size and shape for easy harvesting and spraying.

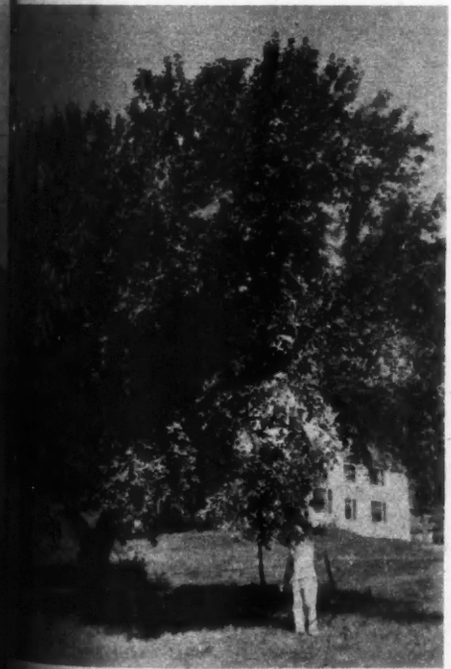
Northern Spy on M IX, ten years old.

Early McIntosh on M IX, ten years old. Here is a very productive and popular backyard tree.

Ten year old Northern Spy. The first four are on M IV roots and are smaller than those in the background, which are on seedling roots.

fied the dwarfing roots from the badly mixed stocks known to European fruit growers for generations. From these he selected out sixteen pure lines of apple rootstocks and named them Mallings I to XVI. There is no relation between the number used to designate the type and the dwarfing effect it produces.

These rootstocks have been kept pure by vegetative reproduction, that is by stooling and mound layering. The behavior of apple varieties on these clonal rootstocks was described by Dr. J. K. Shaw in the AMERICAN FRUIT GROWER, February, 1942, and by Dr. H. B. Tukey in the February, 1944, issue. They stated that M IX is the most dwarfing of these clonal rootstocks and in the order of size is followed in general by Mallings VII, V, IV, II, I, XIII, XVI and XII. Specifically, however, all varieties are not affected to the same degree, for a rootstock may dwarf one variety much more than it does another.



Apple trees on seedling roots grow very large and are difficult to spray and harvest.

Most English varieties of apples have been tried on all the Malling rootstocks, especially to determine their behavior as to size of tree and time of fruiting. At present, experiment stations are studying the effects of these rootstocks on American varieties.

The rootstock or understock M IX is very dwarfing and has taken a place in ornamental gardening. Almost all standard American varieties budded on this root start fruiting in two or three years and even when twelve and fourteen years old are usually low enough that the topmost apples can be reached from the ground. Such dwarfed trees are small enough to be planted much closer together than standard sized trees. Orchards of McIntosh or Baldwins on these roots, when planted 12 by 15 feet apart, have ample room for spray equipment. The more vigorous Northern Spy budded on M IX rootstock is larger, starts fruiting in from four to five years and can be set 15 by 18 feet apart.

At these spacings 150 trees could be planted on an acre as compared to 27 trees of standard stock. This means that dwarfed trees producing an average of 2 bushels per tree would yield 300 bushels per acre. To equal this crop, an acre of standard sized trees would have to produce 11 bushels per tree. Not only would the

(*Continued on page 26*)

About the Author

Dr. W. W. Smith has a keen personal interest in the use of dwarfing stock for apples. On his farm at Guilford, New Hampshire, he has planted approximately 1000 trees of various rootstock and bodystock combinations. As chairman of the Northeastern Fruit Stock conference, an organization of research experts formed to stimulate cooperative efforts in rootstock work, Dr. Smith has had many fine opportunities to observe experiments carried on in other states. In addition to his work with dwarfing stocks, he is endeavoring to improve native blueberry plants and hybridize low wild with cultivated high bush varieties.—Ed.

SWEET AND SOUR CHERRY STOCKS

By K. D. BRASE

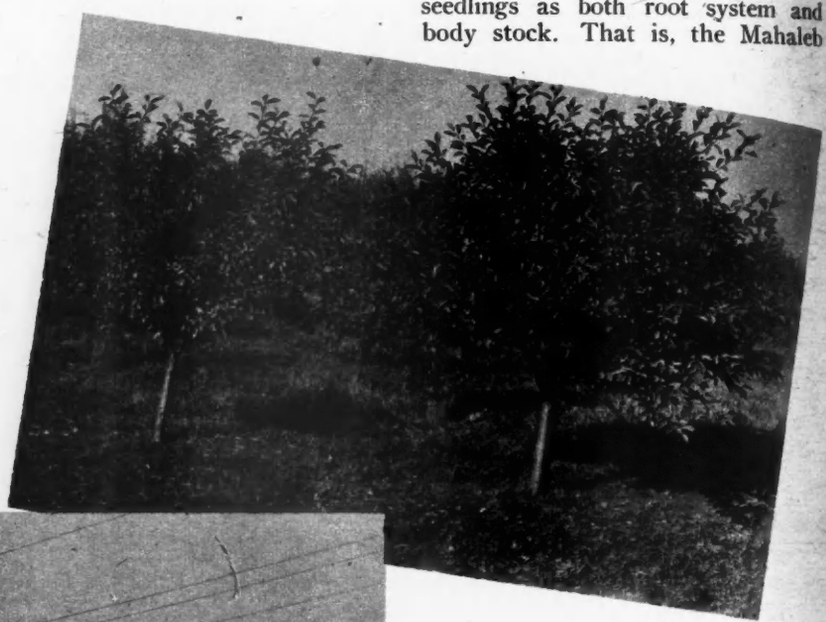
New York State Experiment Station

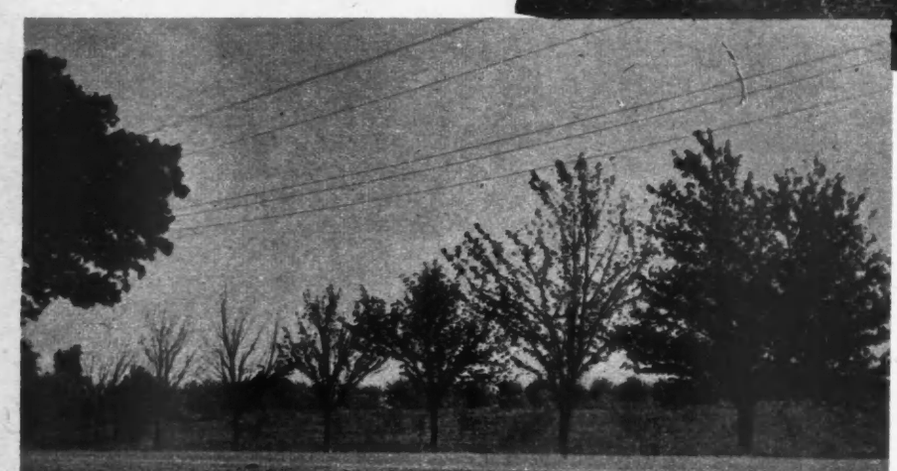
TREES of sweet or sour cherry varieties for orchard planting cannot directly be produced from seed since they will not come true to variety. They also do not easily propagate from either soft or hardwood cuttings, therefore, other methods of propagation as budding or grafting the variety upon a suitable rootstock must be employed. Of the many rootstocks that have been tried only two, namely the wild sweet cherry *Prunus avium L.*, also known as the Mazzard cherry, and *P. Mahaleb L.*, the Mahaleb or perfume cherry of Europe, have thus far been of importance. The question then is, which is the better of the two stocks for our cultivated sweet and sour varieties, the Mazzard or the Mahaleb?

Neither Mazzard nor Mahaleb are natives of North America, but they have been brought to us from Central and Southeastern Europe where they were found growing in the wild in stony, well-drained, limestone soils. Neither will thrive in heavy soils from which, particularly in early spring, water drains slowly. The Mahaleb root system, which is stringy and penetrates deeply into the soil, is exceedingly sensitive to high water levels in soil, whereas the Mazzard, having a coarser spreading root system with many fibrous roots either tolerates slightly more moisture or has the ability to recover and produce new roots more readily than trees on the Mahaleb. If water is for short periods standing on the soil, as observed in nursery plantings, both will succumb. Failure of cherry plantings on Mahaleb stock may thus in part be due to the fact that the trees were planted on soils unsuited for cherry culture. Of course, other factors may also be responsible for the belief that trees on Mahaleb roots are shorter lived. The Mahaleb is botanically quite different from any of our cultivated cherry varieties. Its root system induces earlier fruiting and varieties grown upon it will not ultimately produce as large trees as those grown upon the Mazzard rootstock. It is thus surprising that cherry trees grown for two years in the nursery row on Mahaleb stocks are very vigorous and larger than such trees grown in the same way on the Mazzard stock. In commercial nursery practice, however, trees are budded to a seedling rootstock close to the soil level and only a very short portion of the seedling trunk is involved in the production of the tree. With such trees, when grown in soil suitable for cherry culture, growth restriction of the Mahaleb root system appears only some years after planting.

Furthermore, a distinct dwarfing and early fruiting of cherry trees can be obtained by using Mahaleb seedlings as both root system and body stock. That is, the Mahaleb understock furnishes not only the root system but also the trunk to which at a height of from 2 to 3 feet the desired variety is either budded or grafted. It is thus far not certain if all our commercial sweet cherries will be completely compatible when grafted in this way to the Mahaleb trunk, but such sweet varieties as Emperor Francis, Giant, and Schmidt's Bigarreau and the Montmorency sour variety have been tried and have proved to be congenial on the Mahaleb stock. Growth restriction and earlier fruiting do not take place with cherry varieties when either budded low or grafted or budded high on Mazzard seedlings. Such trees will always be larger than those on Mahaleb stocks. The growth differences, particularly since they become greater the more of the Mahaleb understock takes part in

(*Continued on page 28*)





Lack of drainage is killing the trees on the left, while the tree at the right is saved by a catch basin which permits water to drain off rapidly.

Montmorency after five seasons in the orchard. Small tree on Mahaleb, large tree on Mazzard. Trees were grafted 26 inches from roots.

Twenty-eight year old Elberta tree, budded high on Muir in the nursery.

NEW ROOTSTOCKS FOR PEACHES

By M. A. BLAKE
New Jersey Experiment Station

NURSERY peach trees in the United States are commonly propagated by budding, either in June in the South or mostly in August in the North, on seedlings obtained from pits planted or stratified the previous fall. The pits or seeds used for propagation are obtained from several sources. Lovell pits are secured from California processing plants. Pits are also gathered from so-called "natural" trees scattered through the Carolinas, Tennessee and the South. Elberta pits, almond seed and certain selections of plum species have sometimes been used as sources of rootstocks.

The southern "naturals" have sometimes been termed "wild" peaches. However, the peach was not native to America and the ancestors of the small-fruited peaches originally scattered around the clearings and cabins in the southern Appalachians undoubtedly came from Europe with the early settlers. Some of the pit, fruit and leaf characters of the naturals are typical of the European peach type of colonial times.

Early in the 20th Century the southern pits gathered and sold to propagators were all of the small type, yet they could not be regarded as a single horticultural selection. Some produced white blossoms and green-white fruits, others produced yellow fruits, and there was considerable variation in tree vigor, time of ripening, and leaf form. In general, however, the growth of the seedlings was vigorous and satisfactory to propagators. After a time, known varietal types began to be grown in these same regions and pits from them were mixed with the naturals. The result was that a bushel of southern mountain pits might, and sometimes did, exhibit a wide range in size, form, and marking of pits. In 1932 the writer selected eighteen pits from a bushel of southern pits. The trees from these produced fruits of a good commercial type. One of these seedlings was later named Redcrest. A large nectarine was also obtained.

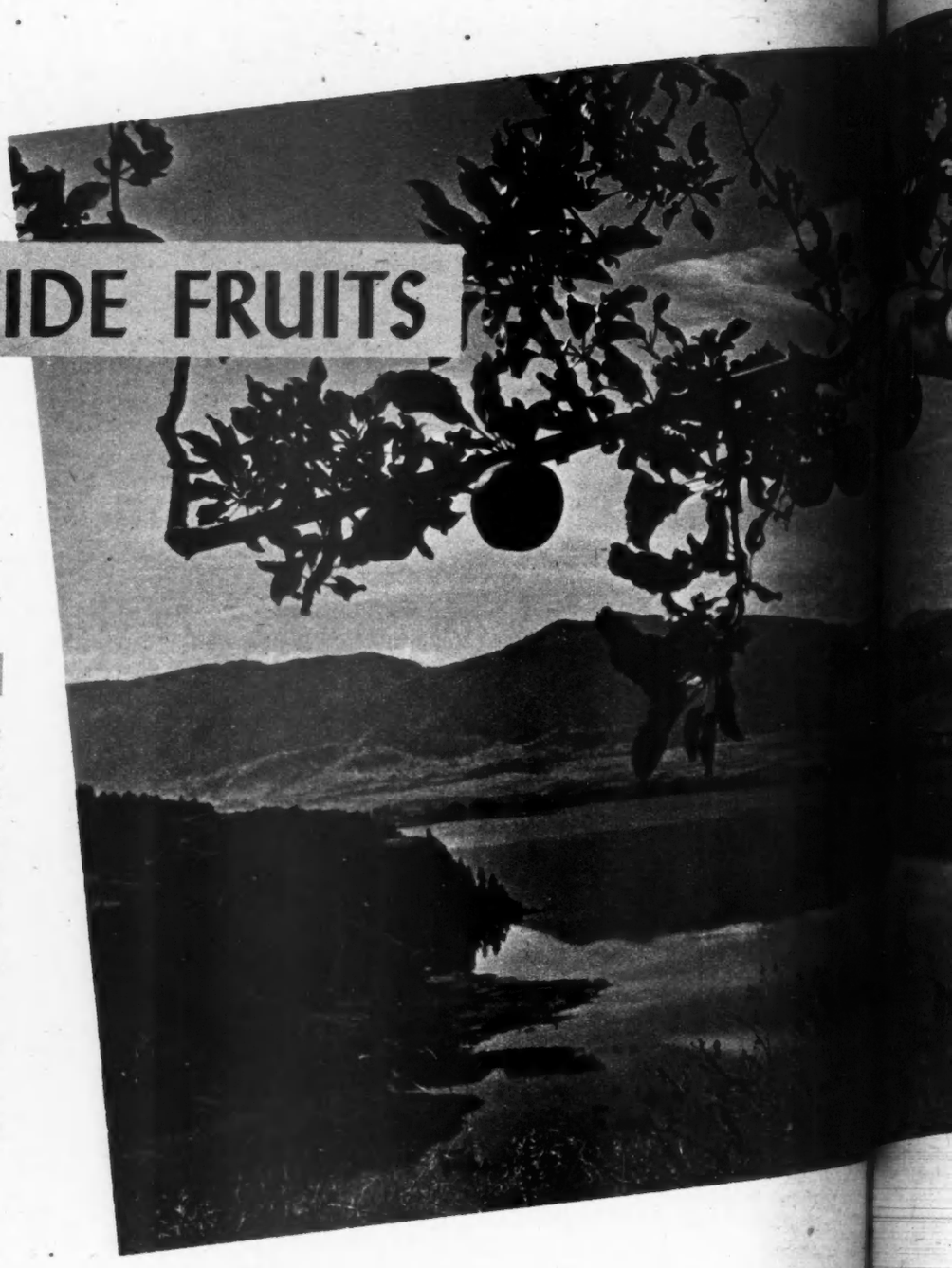
Damage by collar rot to such varieties of peaches as J. H. Hale and Elberta became so serious by 1919 that the writer organized a preliminary rootstock test. The "collar"

(*Continued on page* 30)

Peaches budded high on hardy rootstocks in the nursery.

One year old J. H. Hale tree, budded high on hardy rootstock.

NATIONWIDE FRUITS



APPLES

● **Sprinkling is** the best method of orchard irrigation according to Washington State tree fruit specialists where irrigation is an integral part of fruit culture. Sprinkling is superior because it makes the greatest use of all soil area and fertilizer applications can be reduced in some instances. Cover crops respond better under sprinkling and through proper management, the water supply can be conserved.

Sprinkler irrigation also is finding favor among eastern orchardists who recognize the value of controlled water supply. Installed in the orchard of Alfred Swann, leading Tennessee grower, sprinklers saved his crop during a severe drouth in 1946. Tennessee Horticulture, monthly publication of the Tennessee Horticultural Society, reports that an irrigated tree in Swann's orchard returned an increase of $144 during a two year period over the average of four unirrigated trees.

● **Home orchardists** who have room for only one or two trees can have apples throughout the apple season, according to F. L. O'Rourke, specialist in horticulture at Michigan State College.

This is possible because of a new tree, now offered by many nurseries, which incorporates five varieties of apples with each tree. Described as a "quintuplet", the tree is grown and trained until it has five scaffold branches. At a certain stage of growth a different variety of apple is budded into each of the branches. Combinations can be widely varied, for example, starting with Yellow Transparent, Anoka, Jonathan, and Wealthy in turn, and ending the season with Red Delicious.

● **The Calville Blanc** apple, although insignificant today, may have a profound effect on tomorrow's variety lists. An apple of European origin, the Calville Blanc is exceptionally high in vitamin C having almost as much of the sunshine vitamin as citrus fruits and considerably more than today's commercial varieties.

Fruit breeders at the New York State Experiment Station are now using the Calville Blanc in their breeding program in an effort to increase the vitamin C content of new varieties. This is in line with a relatively new object in fruit breeding—that of developing new varieties that possess greater health giving qualities as well as such traits as increased disease resistance, better yields, and longer storage life.

● **Damage** from mice seems to follow definite cycles and many growers are convinced that mouse population is at a high point, judging by the injury to their orchards.

Since an ounce of prevention is worth a pound of cure, now is the time to check to find if mice are present and take precautionary measures such as poison baiting to eliminate mice which will damage trees this winter. Presence of mice in an orchard may be detected by placing a flat piece of scrap lumber or tarpaper under each tree. Since mice will not run in the open, they will

National Film Board Photo

make runways underneath this obstruction, which are a sure sign that the trees are in danger.

PEACHES

After the leaves have fallen and before freezing weather sets in is the best time to control peach leaf curl. This fungous disease causes leathery, yellow distorted leaves which usually drop. The tree may be dangerously weakened because of the loss of its leaves and in serious infections fruit will either drop or ripen as dwarfed and deformed peaches.

The disease is transmitted in the spring by tiny spores which spring from the fungus overwintering on the tree.

Liquid lime sulfur or bordeaux offers effective control if the spray is applied thoroughly so as to cover all parts of the tree.

STRAWBERRIES

● **Mulch protects** strawberries from winter injury to the roots and crowns, it prevents the heaving of plants due to alternate freezing and thawing of soil, and it retards plant development in the early spring, thus often aiding in preventing injury to buds from early spring frosts. Mulching also controls weeds, keeps berries clean and conserves moisture.

The mulch should be applied in the fall before the first hard freeze. If covered too early in the fall, plants fail to harden properly and severe losses may result. If applied too late winter injury to the crown may result. Exposure to several mild early season frosts before mulching will help the plants to harden.

Clean wheat straw is probably the best mulching material for strawberries. Baled straw may be used if it is well torn apart and evenly spread over the plants. Coarse vegetable material that does not pack tightly over the plants may be used, provided there are no weed seeds in the material.

GRAPES

● **Too severe pruning** of the Fredonia grape may be the cause of reduced yields in the past several years which has been of some concern to growers. While the Fredonia ordinarily produces large crops, its erratic performance during the past few seasons has led some growers to consider replacing it.

Fruit specialists at the Geneva Experiment Station where the variety originated, are of the opinion that the vigorous growth of the vine may lead growers to prune it too severely for best results, and tests conducted by Professor Nelson J. Shaulis seem to bear out this viewpoint. In the tests, four training systems were used,—the Chautauqua, the 4 cane Kniffen, the 6 cane Kniffen and the Umbrella Kniffen, with each system pruned severely, moderately and lightly.

Moderate pruning, where 38 buds were left on the vine, showed an increase of almost a ton over vines heavily pruned, and light pruning, with 48 buds left per vine, an increase of two tons. The cluster size was also increased by the lighter pruning where the Chautauqua system was used. Pruning severity, however, seemed to have little effect on cluster size for the three Kniffen systems.

RASPBERRIES

● **A job all** raspberry growers should accomplish immediately after harvest is to prune out the dead canes and burn them.

The reason for this is that raspberry canes are biennial. They live for two years, attaining full growth the first year and bearing fruit in the second, after which they die. Removing and burning the two year old canes rids the patch of dead wood and prevents the spread of insects and diseases.

ORCHARD PESTS

● **Supersonics** has been known for a long time to possess many amazing characteristics like the ability to break glass, make dogs whimper, and generally to create apparently inexplicable occurrences.

One of the many characteristics of these super-fast sound waves may some day make it possible for an orchardist to "spray" his orchard with these inaudible sound waves which can kill microscopic germs and bacteria.

Practical use of this principle has been partly held up because of the great range of wave lengths necessary to kill the different types of common germs and bacteria, and the fact that even one type of small life might require several wave lengths to kill at different ages or under different living conditions.

Several patents, recently granted, will enable equipment for producing supersonic waves to vary the wave length over a wide range by employing a device to interrupt and change the frequency of a basic wave.

From this may come the orchardists "sound sprayer" of the future.

● **A little ingenuity** plus a few spare parts can often be put together to help overcome a particularly bothersome task. Tired of doing a halfway job spraying 140 fruit trees with a hand sprayer, an enterprising grower constructed his own custom-made power sprayer. With a 42-gallon water pressure tank, an engine-air pump which fits into the spark plug hole of a tractor engine and some pieces of metal rod, a tractor-carried sprayer was made. The tractor engine furnishes the pressure for the tank which is fastened on the tractor by the metal rods fitted to the frame.

UNDERSTOCKS FOR PLUMS

More Research Needed To Develop Uniform Stocks

By J. A. McCLINTOCK, *Purdue University*

WITH NEW and improved methods of plum fruit pest control now available, interest in raising this fruit is increasing. The improved quality of new varieties developed by plant breeders has also stimulated plum fruit production, but even the best efforts of plant breeders sometimes fall short of initial expectation. This is not caused by the failure of a new variety to live up to its initial attractive appearance and fine flavor. The difficulty arises when attempts are made to propagate the promising seedling on other than its own roots. Then its weaknesses show up in a striking manner. As a case in point let us consider the Hall and the Stanley varieties of plums. These two varieties developed by the New York State Experiment Station were introduced about the same time. The fruits of both varieties promised much as additions to the list of good plums. As the years have passed we have seen Stanley take a leading place among commercial varieties, and it is still increasing in popularity in the midwest. During these same years, we have heard less and less about Hall, and what we do hear is not complimentary. Well grown fruits of Hall plums are still as good as when this variety was first introduced. The reason for its failure to live up to its initial promise is the inability of the tree to make suitable growth on the plum stocks used commercially. Personally, I value the quality of the Hall fruits so highly that I have not given up hope of obtaining an understock that will replace its rather weak trunk as grown on Myrobalan seedlings.

In contrast to the Hall variety, Stanley has succeeded because it is a vigorous grower which has adapted itself to the commercially used plum understocks, but even Stanley is not immune to stock-scion incompatibility influences. This statement is illustrated by some Stanley plum trees I saw during the summer of 1947 in the orchard of a commercial grower. The trees were loaded with fruit, but each tree was supported by a frame of posts and lumber which reached well into the branches. These artificial supports were not necessitated by the heavy set of fruit. They were required because the Stanley plum trunks had so overgrown the understocks that they were fully twice the diameter of the slow growing rootstocks at the point of union a few inches above the surface of the soil. The entire tops of these trees were conspicuously stunted for the Stanley variety, and from their general appearance, I am willing to predict that these trees will not be too long lived. There is no use in my quoting what this fruit grower said about the nurseryman who supplied such understocks. Suffice it to say that in this case the understock was evidently one of the slow growing wild seedling plums of the Prunus Americana type. Such stocks are not suited to vigorous growing varieties like the Stanley.

My first observations on plum stock differences were made as a boy in southern Michigan nurseries. There I pondered over the variations I observed in the thorniness of the plum seedlings as we budded them to various varieties. At that time most of the seedling stocks used in the United States were imported from Europe, and the plum seedlings came from mixtures of pits of rather uncertain identity. For want of a more accurate name the mixture was called Myrobalan plum seedlings. While variable in such characteristics as thorniness, these European plum seedlings were vigorous growers suitable for understocks for rootstocks for our cultivated varieties. When European stocks were excluded by federal quarantine, we had to rely on American grown seedlings. Pits and seeds could still be obtained from European sources, but the resultant seedlings as grown in America appeared to lack the uniformity of those raised in Europe. My observation on shipments of Myrobalan pits from Europe over a period of years indicated that they were variable in size and shape. This indicated that little effort was being made in the selection of pits to be sent to America. All sizes and shapes were mixed together under the name Myrobalan. Such information as I have obtained from inspecting plum stocks in nurseries does not indicate that commercial supplies are being improved. The United States needs more research to develop more uniform plum understocks than those now in commercial use.

I first became interested in the possibilities of plum stock propagation by vegetative methods while studying stone fruit virus disease control in Georgia in the early twenties. Subsequent studies in Tennessee disclosed serious compatibility problems which limited the usefulness of clonal plum stocks. At the Purdue Experiment Station studies are under way to solve the compatibility limitations by the use of intermediate stocks and by the breeding of compatible plum seedlings. Both of these lines of investigation have received serious setbacks within the past two years because plots of foundation materials were uprooted to make room for urgent campus expansion. Some plant materials were salvaged, and it is expected that these studies will go forward when land is made available.

As I have nothing new or better to offer at this time, a discussion of the relative merits of available commercial stocks for plums is in order. A good strain of uniform Myrobalan

(*Continued on page 29*)

State NEWS

• Ohio Growers Favor Hibernal Understock

• J. K. Shaw Retires From Massachusetts

CONNECTICUT, *Sept. 23*—To date no Connecticut growers have given the Hibernal or Virginia Crab rootstocks a commercial test. However, there is considerable interest in these stocks due to their relative hardiness and apparent influence on the formation of wide angled scaffold branches.

Several growers have tried various Malling dwarfing stocks with varying degrees of success. Mr. H. G. Cooke and Sons of Branford have 1400 to 1500 trees on Malling stocks II, III and V. The Cookes have McIntosh, Baldwin, Delicious, Early McIntosh, Macoun, Gravenstein, Transparent, Red Rome, Spy, Kendall and Pound Sweet growing on the above mentioned stocks.

The Cookes are growing their own Malling stocks and are planning to make additional plantings. They are well pleased with the response of McIntosh on Malling II.—*Arthur C. Bobb, Ed. Fruit Specialist, Storrs.*

MASSACHUSETTS, *Sept. 16*—After 39 years of service, Dr. J. K. Shaw retired on September 1 as Research Professor of Pomology in the Massachusetts Agricultural Experiment Station. Dr. Shaw was one of the foremost pomologists of the country. His greatest contribution to the fruit industry was his development of a method of identifying varieties of fruit trees in the nursery. Fruit growers are now able to obtain trees which are "true to name." He is also noted for his work on clonal stocks, cultural practices and mineral nutrition of apples. Dr. Shaw is a past president of the American Society for Horticultural Science and a member of several honorary and scientific societies.

At their summer meeting, which was held in Amherst on July 31, the Massachusetts Fruit Growers' Association presented Dr. Shaw with a portable radio in appreciation of his many years of helpful service to the Massachusetts fruit grower. In the evening a testimonial dinner was held in Dr. Shaw's honor at which time he was presented a bound volume of letters from his many friends and fellow workers. This volume contained over 220 letters with 9 coming from foreign countries. While Massachusetts fruit growers are reluctant to lose the services of Dr. Shaw, they all wish him the best of luck and hope he has a long and happy retirement.

A three day tour was conducted by the New England Section of the American Society for Horticultural Science in the state during the latter part of August.—*W. D. Weeks, Mass. State College, Amherst.*

NEW YORK, *Sept. 22*—Our New York State Horticultural Society's winter meeting for western New York will be held January 14, 15 and 16—probably at Edgerton Park—in Rochester; and the meeting for eastern New York will be held at the Armory in Kingston, January 28, 29 and 30.

Western New York State fruit crop has suffered considerably from red banded leaf roller in some orchards; other orchards are apparently free of it. The total crop will be cut down considerably under recent estimates, since the damage has occurred within the past two weeks to a month.—*D. M. Dalrymple, Sec'y, N.Y. State Hort. Soc., Lockport.*

OHIO, *Sept. 17*—Harvest of Elberta peaches in mid-September is just getting under way in North Central Ohio, with the bulk of the Elberta harvest still ahead through the important lakeshore counties of Northern Ohio. Size and quality is generally good but there is far too much damage from brown rot because of the prolonged wet season. Peaches will be on the market for another month.

Top picking of Jonathan and Grimes is just starting in the southern counties, and beginning in the central section on McIntosh. Most of the fall and winter varieties will be harvested in October, as the harvest season is running two to three weeks later than last year.

Among understocks used for apples so far in Ohio, Hibernal is proving most satisfactory for the commercial varieties grown. Experience has shown that the budding or grafting should be within a foot or thereabouts of the trunk of the tree. First experiences with topworking, particularly with Virginia Crab with buds or grafts placed 18 inches or more beyond the trunk have shown that such trees twist and lop over badly and make poorly shaped trees. Virginia Crab is no longer used very much except with Grimes Golden and Jonathan, and occasionally with Golden Delicious. Topworked trees are showing considerably earlier bearing than trees on own roots. One of our growers, W. J. Welday, Smithfield, is propagating own-rooted Hibernal trees in his nursery and then transplanting these to his orchard after they are properly topworked. Such trees are showing very uniform satisfactory growth in the orchard.

The winter meeting of the Society is scheduled for Hotel Cleveland, Cleveland, Ohio, February 18, 19 and 20, 1948.—*Frank Beach, Sec'y, Ohio State Hort. Soc., Columbus.*

USDA TO BUY SURPLUS DRIED FRUIT

According to an announcement by Secretary of Agriculture, Clinton P. Anderson, the Commodity Credit Corporation will purchase up to 133,000 tons of dried apples, dried peaches, dried prunes and raisins if necessary to provide outlets for the relatively large 1947 production.

The maximum for each fruit is 2,250 tons of dried apples, 3,750 tons of dried peaches, 61,000 tons of raisins, and 66,000 tons of dried prunes.

Purchases will be made from processors and packers and it is expected that the dried fruit will be disposed of through school lunches or foreign relief feeding.

WASHINGTON, *Sept. 19*—The 43rd annual meeting of the Washington State Horticultural Association is scheduled for December 4, 5 and 6 at Wenatchee. The theme of this year's meeting will be along the line of better apples to the consumer.

Cultural problems and pest control are of extreme importance at this time. New insecticides that are still in the experimental stage are being used extensively. The results of using these experimentally will be discussed by men from experiment stations of the northwest.

During the war, fertilization of apple orchards has taken a trend for using more fertilizer. This trend is apparent among growers of other tree fruits of the State of Washington also. Now while we are in the midst of apple harvest, we are wondering if it may not be advisable to lighten our application to apple trees particularly. The heavy applications in some instances seem to have seriously delayed coloring.

The officers of the association this year are: Harold Copple, Wenatchee, president; Charles F. Morrison, Zillah, vice-president; and John C. Snyder, Pullman, Secretary. Now when there is so much interest in building new homes, there is also a great deal of interest in landscaping these homes. We are considering the possibility of developing a section of this year's program dealing with this subject. This section will be of interest to highly specialized gardeners as well as fruit growers in general.

The strawberry growers of Washington are now going back into the strawberry business much as though they had a new lease on life. In the past they have had much trouble with yellows. In fact, yellows made it unprofitable for some growers to stay in the business. With new insecticides, growers and experiment station men alike are hopeful of checking the spread of this disease by controlling insects which are thought to be instrumental in spreading it. In Whatcom County where there are something over 1600 acres approximately 2/3 of the plantings have been treated with Benzine Hexachloride. The result of this treatment is in no way conclusive, but growers and experiment station men alike are hopeful of substantial improvement from this factor.

Raspberry growers of Western Washington for the most part experienced a reasonably good season in 1947. The plantings have been cared for in fine shape and as a result there is a good crop of fine canes for next year's crop. Many of the growers follow the practice of removing the old canes following harvest. Others remove these canes during the dormant period in February. In general the plantings show the result of good care during the past season.—*John C. Snyder, Sec'y, Wash. State Hort. Soc., Pullman.*

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APS HISTORY OF HORTICULTURE

EARLY CALIFORNIA FRUIT GROWING

By H. M. BUTTERFIELD, *University of California*

THE PIONEER work of introducing fruit trees into Oregon in 1847 by the Lewelling brothers has been reported in a previous article, and some have assumed that the Lewellings were responsible for the introduction of the first named varieties of fruits into California, but evidence does not support this claim. There were probably two or three importations of named varieties into the state before that of the Lewelling nursery stock.

About 1835, Jose Jesus Vallejo took over the mission orchard at Mission San Jose, and in later years, his daughter, Guadalupe, described it as it grew in those early Spanish days. There were four varieties of pears: "Presidente," "Bergamota," "Pana," and "Lethera." No satisfactory description of these varieties has been located to date, although Guadalupe Vallejo reported that one of the four varieties had fruit as large as a Bartlett.

General John Bidwell, in his travels about California after he arrived in 1841, reported the names of two other Spanish pears. Possibly the Spanish did originate and propagate these different pear varieties, and if they are entitled to recognition as named varieties and were propagated, they were probably the first named varieties of fruits grown in California.

For some reason, the work of the Russians in early California horticulture has been mostly overlooked. Khlebnikof reported that the Russians planted apples at Fort Ross, Calif., in 1820, and Professor E. O. Essig, head of the Division of Entomology at the University of California, has described the old Russian orchard. He has submitted pictures of the old Gravenstein apples of the Russian planting, and all seem agreed that they are definitely of the Gravenstein variety. If this be true, the Russians may be credited with planting the first named varieties of apples in California in 1820.

The first important importation of named varieties into California, after that territory became a state, was by William H. Nash and R. L. Kilburn. Professor E. J. Wickson in various editions of his "California Fruits" wrote, "In the fall of 1849, W. H. Nash joined with R. L. Kilburn in ordering from a nursery in Western New York a small box of thirty-six fruit trees which, packed in moss, well survived the journey around the Horn, arriving and being planted in the Napa Valley in the spring of 1850."

The shipment included varieties of apples, pears, and cherries.

The importation of fruits into California by the Lewelling family has also been reported by Professor Wickson in these words, quoted from Seth Lewelling of Milwaukie, Ore., "During the winter of 1850-51 we put in about twenty thousand grafts. In March, 1851, I went to Sacramento, taking with me a box of grafts of apple, pear, peach, plum and cherry, and sold them in Sacramento. I believe I have the honor of being the first to distribute grafted fruit in California." This shows that the Lewelling nursery stock was distributed in California in March, 1851, but the fruit varieties distributed were by no means the first to be brought into California. We may credit Seth Lewelling with bringing in this nursery stock and selling it in California, but we should not forget the previous importations mentioned above.

It may be further reported in connection with the early Spanish pears in California that the variety, "Pera de San Juan" (St. John's Pear) ripened on St. John's Day (June 24). Pera de Coche (Hog Pear) has also been listed among these varieties of Spanish pears. The "Bergamota" listed by Guadalupe Vallejo may have been a form of Bergamotte Rouge which is of ancient origin. Le Lectier in 1628 mentioned this ancient variety which certainly resembled the long reddish pear grown by the Spanish in early California.

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- Oil Base Concentrates
- Wettable Powders
- Dust Base
- Dust Mixtures
- Copper-DDT Concentrate
- Sulfur-DDT Concentrate
- Xanthone-DDT Concentrate
- Livestock & Barn Spray Powder
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Genicide for Orchard Mites
Rotenone Sprays & Dusts
Nicotine Products

Arsenicals

Lead Arsenate, Astringent & Standard
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Other Arsenicals

Coppers • Sulphurs

Spraycop Formulations
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Micro-Dritomic Sulfur
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LOOK AT THE FACTS ABOUT THE

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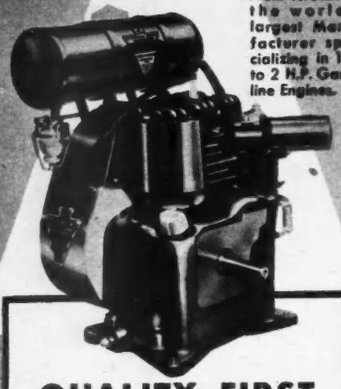

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MASSEE PLACE NURSERY

MARSHALLVILLE, GEORGIA

FIGHT WINTER-KILL

(*Continued from page* 9)

uninjured while adjacent Baldwin trees in the same orchard that were not top-worked were completely winter-killed, indicating a transmission of hardines from the McIntosh scion to the Baldwin stock. Research in Maine has shown that the opposite may also occur, and that in some stock-scion combinations there is a transmission of hardiness from the stock to the scion. In this way hardy stocks not only overcome the trunk and crotch types of winter injury but also may impart hardiness to the fruiting variety.

Orchard Trials Began in 1936

The first orchard trials of hardy trunk-forming stocks in Maine were started in 1936 using Virginia Crab and Hibernal since both of these were well known hardy stocks. Additions were made during following years, mostly of hardy Russian and other European stocks and also a few from the colder parts of Canada. At present some 45 different kinds of hardy trunk-formers are under test. Virginia Crab and Hibernal are used as the standards; all others are compared with these with the eventual hope of finding which are the better. Since Maine produces mostly McIntosh, Cortland, Spy, and Delicious these are the scion varieties used in the larger experimental plantings. Practically all the varieties now being grown in Maine are also represented in smaller plantings of only a few trees each, but the main emphasis is placed on the four varieties that compose most of Maine comercial apple orcharding.

Basis of Selecting Stock

The basis of selection for a trunk-forming stock has been the possession of several of the following desirable characteristics: (1) hardiness; (2) wide crotch angle; (3) good branch distribution; (4) vigorous growth; (5) compatibility with various apple varieties; and (6) ability to form trees that can be top-worked completely in the fewest years. Of these, hardiness is the first and chief requirement. Since top-working consists of setting buds or scions in the branches at some distance from the trunk, a wide-branching trunk-forming stock will improve such upright branching varieties as Northern Spy, Early McIntosh, and Delicious. The ability of a stock to form branches early and in symmetrical arrangement is impor-

(*Continued on page* 24)

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There's no problem to fast handling in confined spaces if you use the Handibelt portable conveyor —save lifting—carrying; users report 8 to 10 man hours saved and volume of items handled more than doubled. Easily wheeled about by one person. Handles boxes, bags or cartons weighing up to 135 pounds. Can be used inclined, declined or horizontal. Belt is free of side rails and reversible in movement. Operates from any ordinary lighting circuit. Available in two models: No. 11 piles up to 7 ft. 6 inches; No. 16 piles up to 10 ft. 6 inches.

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Size-controlled stock—DWARFS, 6 to 8 ft. high. SEMI-DWARFS, 12 to 15 ft. Start to bear at 2 to 3 years of age.

NOW IS THE TIME TO TRY DWARF FRUIT TREES in your Orchard or Home Garden

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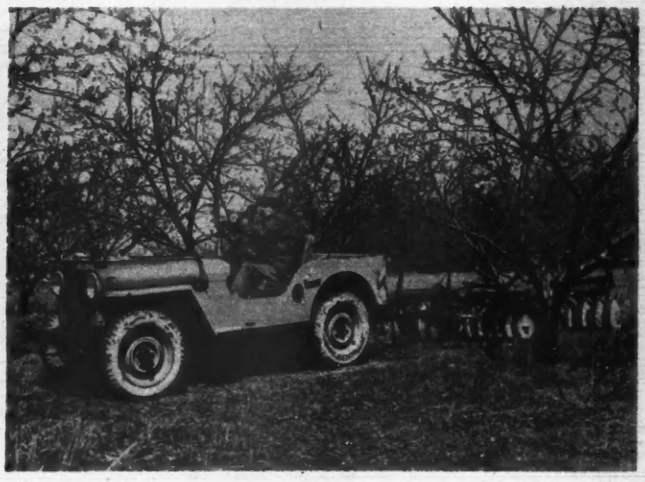

4-WHEEL DRIVE and low speeds of 2½ mph up make the "Jeep" an ideal tractor for the fruit grower. All-wheel traction pulls implements in mud and sand . . . gives straight, true steering without crabbing on turns. Note low silhouette.

NO IDLE TIME for the Universal "Jeep." When there's no tractor work to be done, it serves you as an economical pick-up truck with 2-wheel drive for the highway and 4-wheel-drive traction for hauling jobs anywhere in your orchard.

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'Jeep'

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Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you dependable Dodge truck service; *Third*, by providing truck parts identical with original Dodge "*Job-Rated*" truck parts.

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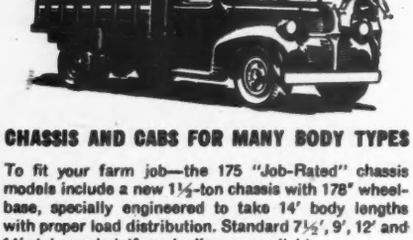

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ONLY DODGE BUILDS "Job-Rated" TRUCKS

DODGE "Job-Rated" TRUCKS FOR THE FARM

"Job-Rated" for Economy . . . . . "Job-Rated" for Dependability

FIGHT WINTER-KILL

(*Continued from page* 22)

tant in this same respect. Compatibility, the ability of stock and scion to make good union and growth, is a most important characteristic. Perhaps it would be desirable to search for a stock that would be compatible with many scion varieties, but it is conceivable that no single stock will prove best for all the apple varieties that are now, or will be, important in Maine. Therefore a stock material which possesses other desirable characteristics but is found incompatible with a particular variety or strain, is not eliminated from further consideration.

Evaluation of Stocks

The evaluation of these trunk-forming stocks is necessarily a long-time project, but sufficient data have been obtained to warrant eliminating some and expanding the field testing of others. Four Russian stocks, Antonovka Shafran, Charlamoff, Kulon Kitaika, and Bellfleur Kitaika, all are quicker than Virginia and Hibernal in forming orchard trees when top-worked. Other European trunk-forming stocks such a Bellfleur Phoenix, Sestra Bellfleur Kitaika, and Chinese Shampanren also show promise, although data are lacking to make even a preliminary evaluation now. Several Canadian stocks also show promise; Anaros, Columbia, Osman, and Robusta No. 5 all give indications of being superior to both Virginia and Hibernal. However, there is considerable danger in giving too hasty an evaluation. Two years ago it was thought that Tayezhnoie was an excellent stock but the unions made by Baldwin, McIntosh, and Northern Spy show all these varieties to be definitely incompatible with Tayezhnoie. The trees looked well until fruiting began in the fifth orchard year and then breakage began to occur at the graft unions. Now where the graft unions have thus far escaped breakage the leaves on the scion growth begin to turn yellow early in the growing season, the fruit sets heavily and drops before maturity, and with every strong wind there is danger of limb breakage at the graft union.

Compatibility Status

So far Cortland and Delicious appear compatible with Tayezhnoie, and these combinations may prove satisfactory. Virginia Crab is incompatible with Winter Banana, Gravenstein, and Red Gravenstein, and the indications are that this stock variety may also be incompatible with Rogers McIntosh and

Red Spy. Northern Spy appears to do well on Virginia and Richared Delicious makes an excellent tree on Virginia. These last two varieties have been in bearing for several years and the trees are both vigorous and fruitful. At present Virginia is the preferred stock for Baldwin. This stock-scion combination has enabled Baldwin to be grown and to fruit in parts of Maine where Baldwin could not previously be grown even as a nursery tree without winter-killing. Virginia seems to transmit hardiness to the scion wood. The combination of Hibernal and Baldwin has failed in most cases; the scion wood winter-killing to the graft union. Indications are that Baldwin is not compatible with Robusta No. 5; the unions closely resemble those of Rogers McIntosh on Tayezhnoie, where breakage has occurred. Baldwin is definitely incompatible with Florence Crab, the unions breaking out easily. Robusta No. 5 does appear compatible with McIntosh and the Canadian investigators are beginning to favor this trunk-former in their more recent plantings. Robusta may well find a definite place in the future plantings made in Maine, since it has proven its hardiness in the preliminary test plantings in the coldest parts of the State.

The Future Looks Bright

So it goes—orchard trials are necessary over a period of years before any particular stock-scion combination can be recommended even for tentative consideration, but the future looks bright. With so much apparently good material to choose from, and with more in prospect since new stocks are being added to the experimental lots each year, orcharding in those areas where winter injury is a serious menace may look to a future that will be free from the severe losses that can result from a cold winter.

The Grower's Hardy Stock Nursery, a Maine cooperative enterprise for producing hardy trunk-forming stocks for orchard planting, is now in its sixth year. So far only Virginia and Hibernal have been grown, but in the near future Antonovka Shafran, Charlamoff, Kulon Kitaika, Bellfleur Kitaika, and Robusta No. 5 will probably also be propagated for orchard plantings. The final decision as to stock variety must await long time orchard trials but progress can now be made with the more promising trunk-forming stocks.

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MAKE EVERY ENGINE A MORE DEPENDABLE ENGINE

THE LOW-DOWN

(*Continued from page* 11)

average yield per acre be the same if the trees produced as indicated, but the trees dwarfed on M IX stock would be producing crops 5 or 6 years earlier than the standard trees.

Dr. W. H. Upshall of the Vineland Experiment Station, Ontario, Canada, has found that up to 16 years of age, most commercial varieties of apples produce more fruit per acre on M IX roots than on seedling roots. However, when the trees on seedling roots come into full bearing at about 16 years of age, they outyield trees on M IX rootstock and, as they grow older and larger, this increased yield becomes more marked. In spite of this record for standard trees, it would seem that those interested in orchards for economic reasons would prefer trees giving the highest possible yields during their first 12 to 15 years. The indication that trees on M IX root are shorter-lived than standards may be a point in their favor because replacements with trees of newer and better varieties on early-bearing, quick-producing rootstocks would be more economical than replacements with standard trees.

However, size of tree and the age and amount of bearing do not tell the whole story about trees grown on M IX roots. To succeed with them, the grower must consider three things:

1. They require good soil.
2. Because of brittle stock at the root-scion union, the trees must be supported by stakes or wires.
3. Because these trees are weaker, they must be given the best cultural treatment.

Though not recommended for commercial orchards, trees on M IX roots can be grown successfully if given individual care and proper support. They have become popular backyard trees for many New England gardeners, and also lend themselves to the Espalier system of training on wires and fences, making beautiful ornamentals and producing heavy crops of fruit in proportion to the tops of the trees. Most American varieties of apples do well on M IX rootstock under these conditions. Northern Spy on M IX is too vigorous to be trained on wires but does make a nice backyard tree as it is larger than most varieties on this stock.

It has been noted that trees fruiting at an earlier age than is usual for that variety are apt to be smaller at maturity. It seems that growth slows up with fruiting and that the

age at the time of the first full crop is a factor in the ultimate size of the tree. This is especially characteristic of trees on Malling rootstocks; for instance, trees on M IX roots grow more vigorously than most in the nursery, but slow up markedly at their first full fruiting.

M IV dwarfs commercial varieties somewhat and makes a more spreading tree that fruits at an early age. For a while it seemed to give promise and hope to orchardists interested in a smaller tree, but because of its weak root system, it does not become well anchored. In the hurricane of 1938 many were blown over and subsequent observations have shown it to be unreliable in its ability to stay upright in orchards. Though discarded as a commercial possibility for a smaller tree, it is the size many orchardists would like and when it has stayed upright it has been very fruitful.

M V produces a tree similar to M IV in size but is a shy bearer with most American varieties and is not recommended.

Mallings XII, XIII and XVI apparently only slightly dwarf the standard varieties of apples. In at least one experimental planting M XVI has produced large and especially fruitful trees.

Recently, in the continued search for more satisfactory dwarfed trees, attention has been turned to M I and M II which are slightly more dwarfing in their effects than Mallings XII, XIII and XVI. Plantings of American apple varieties on M I rootstock have come into production from 1 to 3 years earlier than the same varieties on seedling roots. In plantings where these trees are 15 to 18 years old, the trees on M I and M II roots vary little in size from those on seedling roots; in fact when these trees have reached 24 or 25 years of age they are larger than some orchardists desire. It is quite possible that trees on M I and M II will nearly stop growth at 25 years and hold their acquired size, whereas the seedling trees will continue to grow higher. Since plantings on M I have shown a tendency to lean, there is some concern about their ability to stay upright.

M VII has not been thoroughly tested in this country but it seems to show promise of producing the sought-for dwarfed tree. It makes trees considerably smaller than do M I and M II and even smaller than M IV. Available reports promise that M VII will produce early fruiting, sturdy and well anchored trees. The fact that it is a popular stock

(*Continued on page* 33)

Time to FERTILIZE *with a* PIEDMONT *America's Favorite* SPREADER

YES, it's time to fertilize again. And wise fruit growers are choosing the PIEDMONT to get best results with their fertilizer distribution. For the PIEDMONT, with its special design, assures an even spread with no waste, plus accurate control of poundage from 50 pounds to 2,500 pounds per acre.

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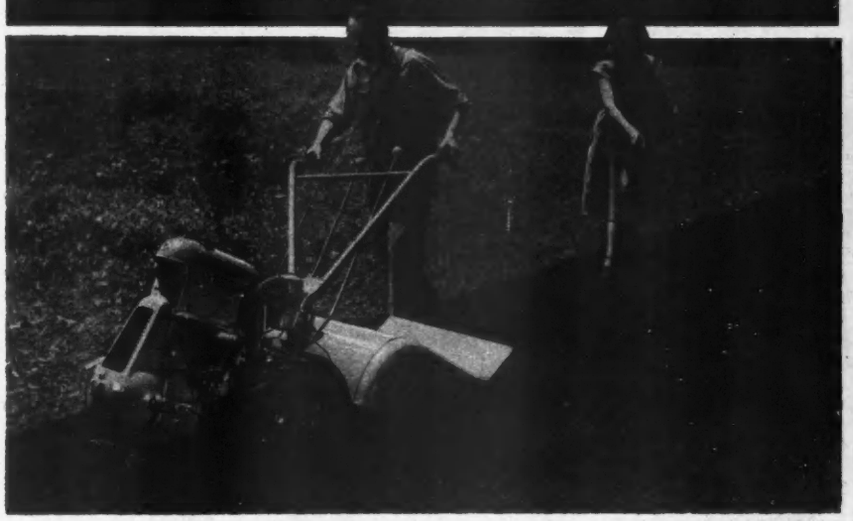

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To grow high quality mulch material right in your orchard, broadcast AERO Cyanamid, Granular over the entire area. Mulch conserves moisture, supplies plant nutrients, protects falling fruit against bruising and adds humus to the soil.

Fall or early spring application is effective. If you want special information as to rates of application on different fruits write for instruction leaflet.

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CHERRY STOCKS

(*Continued from page* 12)

building the tree, appear to be due to lack of affinity between the variety and the Mahaleb rootstock. It might be said that sweet varieties more likely will do best on Mazzard, whereas sours grow and produce well on Mahaleb.

Many fruit growers have given first choice to cherry trees grown on Mazzard stock whereas nurserymen prefer to propagate cherry trees on Mahaleb. An important factor in obtaining satisfactory stands in budded trees is the condition of the seedling rootstock at budding time. Premature defoliation by cherry leaf spot *(Coccomyces spp.)* may occur on both Mazzard and Mahaleb. Mazzard seedlings in the nursery row may be partially defoliated by early August or at the time when budding the variety upon the rootstock. This defoliation not only shortens the working period for budding, but it also affects secondary growth, thus buds inserted fail to unite with the stock. Mahaleb seedlings will escape leaf spot much longer than Mazzard and if leaf spot occurs, it will be at a later date when the budding operations are completed and the buds have united with the stock. Spraying to keep the foliage of Mazzard free of disease or searching for stock resistant to cherry leaf spot is, therefore, a necessity.

Widespread variations exist in Mazzard and Mahaleb seedling stocks. Unsatisfactory results in orchards thus may well be due to the use of undesirable strains. Distinct types varying from each other in habit of growth and color of the bark have been rather constant. Such variations must be recognized and evaluated. Thus, strains within Mahaleb seedling rootstocks now in use may be found which may make better rootstocks. Among Mazzard seedlings the so-called silver bark strain is believed better than seedlings from trees having dark brown bark with large lenticels. Selections out of seedlings from trees of the silver bark strain have also produced trees of various shapes.

Seedlings grown from seed of selected trees of the silver bark Mazzard strain, have shown differences in germination, vigor, and uniformity of growth. Indeed, the work of selecting parent trees for seed production and growing and observing seedlings has just begun.

Due to the presence in cherries of certain virus diseases such as "ring spot" and "cherry yellows" research workers are constantly on the alert

(*Continued on page* 31)

PLUM UNDERSTOCKS

(*Continued from page* 16)

seedlings is the best plum understock available today. For our varieties of European type plums, Myrobalan seedlings will make far better root systems for heavy soils than will peach seedling stocks. Myrobalan seedlings are more resistant to low temperatures than most peach seedlings.

As a second choice I would prefer southern naturalized peach seedlings as stocks for European plum varieties and also for the Japanese varieties used in the United States. These peach seedlings produce vigorous standard sized plum trees, but the peach root systems are more susceptible to attacks by root-knot nematodes and crown gall bacteria.

Seedlings of American wild plums are among the most resistant to low temperatures, but then slow growth makes them less desirable understocks for European or Japanese varieties. Their chief value as rootstocks is for varieties of plums of American origin or hybrids of European or Japanese varieties with American varieties.

Both Myrobalan and American plum seedlings are susceptible to certain stone fruit virus diseases. To date there is not much published evidence that these virus diseases are seed-transmitted, therefore, most of our plum seedlings should reach our nurseries in a disease free condition. There is increasing evidence that viruses are present and on the increase in commercial varieties of stone fruits. Scion varieties and not stocks are, therefore, our most dangerous sources of virus transfer. Diseased budwood could contaminate the best of healthy plum seedlings because most of those viruses are transferred when tissue union occurs. During the past few years, I have seen some of the losses caused by cherry viruses in commercial orchards of midwestern states.

There is no effectual control after a tree becomes diseased, therefore, the only practical method is to propagate only from disease-free parent trees of each variety. Assurance of freedom from virus diseases can be given by careful indexing of budwood. What has already been accomplished for cherries where virus free nursery trees are now a reality, we have reason to believe will be accomplished for the other stone fruits. I take this opportunity to appeal to fruit growers to support any legislation and research for plant virus control. Research activated by legislation is your greatest assurance of healthy fruit trees.

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From where I sit ... *by* Joe Marsh

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I guess just about all of us secretly hanker, from time to time, for the good old days and the good old-fashioned pleasures. Leastways, Buddy Richards done a thriving business reviving the old-time hayride.

All the equipment he needed for this was a team of horses, and a stout straw-bedded rack. Buddy now takes as many as thirty adults —at fifty cents a head!

Two or three times a week they start from Town Hall, and go out along the river; stop for a friendly glass of beer at Shoreside Tavern; and come home by way of Pound Ridge . . . nine miles in all.

Not very exciting, you might say. But from where I sit it's not excitement that we need these days—but those simple country pleasures that are part and parcel of America—the old-fashioned hayride, with its song and jollity; the horseshoe games; the friendly glass of beer; and the good companionship that they engender.

Joe Marsh

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NEW STOCKS FOR PEACHES

(*Continued from page* 13)

of a tree is that point on the trunk where the fully exposed bark joins that protected by soil. It is there that the inner bark and cambium mature latest in the fall and freezing and thawing effects may be most extreme. A peach tree, therefore, should never be planted with the point of the bud union at the ground level. To prevent winter injury and collar rot on the trunk of such a variety, it is apparent that the hardy or resistant stock should extend several inches below and at least 12 to 15 inches above the ground level.

In 1921, six different rootstocks were budded 12 to 15 inches high in the nursery to the varieties Belle, Elberta and J. H. Hale. In 1923 they were planted in test orchards in three different places in the state. In general, all the trees made a good growth. In one orchard more Elberta trees, budded high on Muir, remained in the orchard longer than on any other stock. A considerable number of these trees are still in commercial production and bore a good crop in 1947.

Some of the qualities required of a rootstock for peach are that the trees be uniform in rate of development, habit of growth, and time when they cease growth in the fall. They should be relatively resistant to drought and adaptable to moderate variations in environment. It is desirable, too, that the foliage and growth characters of a rootstock be rather easily distinguished from those of most commercial varieties that will be budded on them. With these requirements for a good rootstock in mind, the New Jersey Station began work in 1919 to develop a suitable peach rootstock. As a result of this work, two rootstocks were developed.

A red foliaged variety was obtained about 1919 and many seedlings were grown from it. One of these trees was finally selected as the hardiest and best and is now termed the "Rutgers Red Leaf Rootstock." The seeds or pits often remain viable two and three years when properly stored. The seedlings are vigorous, hardy, and adaptable to differences in soil types, provided the conditions are reasonably favorable to peach. No peach can be expected to succeed on too wet, too dense, or too acid and infertile a soil.

At the time work was begun to obtain a red-leaved stock, selection was also begun to secure a hardy green-leaved stock. This goal has been at-

tained after many years of testing and observation in the nursery row and orchard. The parent green-leaved stock tree developed and now propagated under the name "Rutgers Green Leaf Rootstock" was selected from a considerable number of trees grown from southern naturals.

Pits accumulate in large heaps at processing plants. Unless these piles are leveled and the pits are aerated and dried out rather quickly, they heat, causing injury to the kernels, making such pits worthless for propagation. Well aired and dried Lovell pits have germinated well and have made a good, uniform top growth at New Brunswick the first season, but Lovell pits held over for a second year have not germinated well. Just how hardy this stock is for preventing collar rot has not yet been determined at this Station. Pits of Rutgers Red and Green Leaf stocks are not planted until the second year at the New Jersey Station. They germinate better if kept moist during second summer and planted in fall.

Since J. H. Hale is known to be particularly susceptible to collar rot in the East, a considerable number of trees were propagated high on eight different rootstocks in the nursery in 1946. Included among others were Lovell, Muir, Rutgers Red Leaf and Rutgers Green Leaf. Many of the trees on all of the stocks graded 4 to 6 feet. Selected specimens were planted in test orchards in different parts of New Jersey in the spring of 1947 under the direction of William Schneider.

CHERRY STOCKS

(*Continued from page 28*)

to discover if these virus diseases are seed borne and if they are present in cherry seedling rootstocks now in use. As far as is known, neither cherry yellows nor ring spot has been found in Mahaleb seedlings but a recent report states that ring spot may be seed borne in Mazzard seed.

It is also true, for a similar reason, that seed collected from the Montmorency variety, even if it had produced satisfactory seedling stands might not be a safe source for sour cherry rootstocks. Montmorency seed has given poor germination and seedling growth. Consequently, little may be hoped for it as rootstock. It can be said that seedlings of *P. cerasus*, the sour cherry, are of little value as a stock, since germination and growth of seedlings is variable. However, the sour cherry will send up numerous suckers from its roots and selection from such suckers, provided they do not carry a virus disease, may be another approach toward finding better rootstocks.

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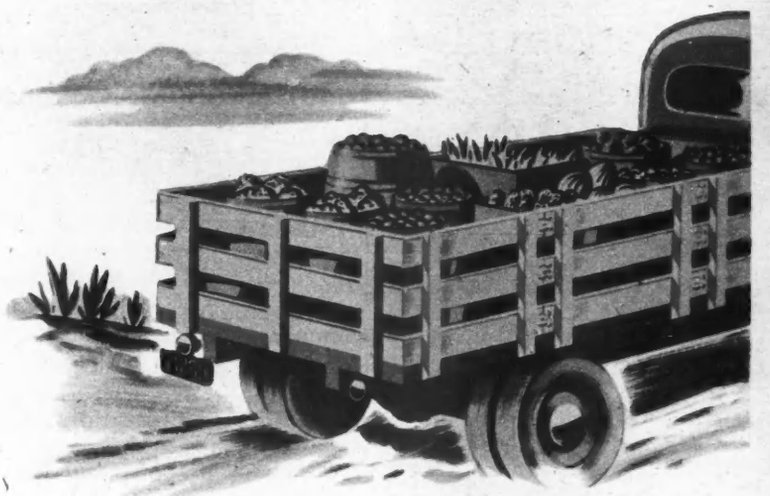

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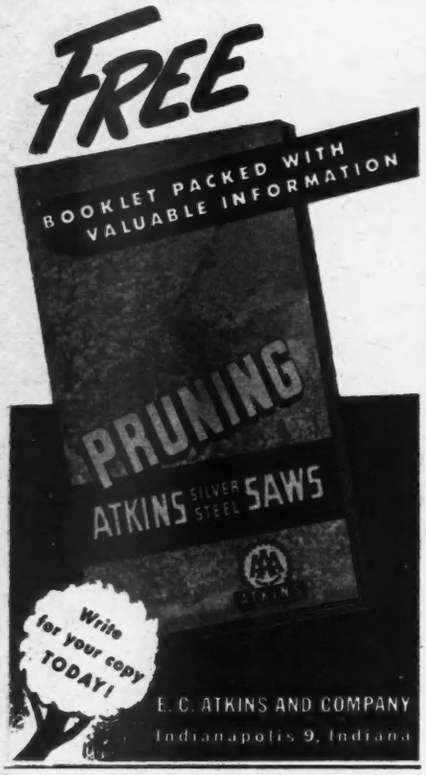

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NUT GROWERS NEWS

38th Annual Convention

THE NORTHERN Nut Growers Association, Inc., held their 38th annual convention September 3 and 4 at the Ontario Agricultural College, Guelph, Ontario, Canada.

The province of British Columbia, Ontario and 14 states of the USA were represented at the meeting.

Exhibits from both Canada and the U.S. included large halves and quarters of black walnuts, fire blight resistant chestnuts, and hickories with a shell structure allowing the kernels to come out in halves and large pieces.

Brought out at the convention was the fact that black walnuts vary in length of season required to mature the nuts. Indications are that the intensity of summer heat will hasten or retard the maturity of the nut. As a precaution before planting, it is recommended that new varieties be planted not too far north of the climate zone in which they are found, unless planted for further testing.

Many varieties of nut trees can be grown in Ontario. At Mr. G. H. Corsan's place, Islington, Ontario, we saw filbert bushes laden with nuts. Heartnut, butternut x Japanese walnut seedlings bearing a good crop, shagbark and shellbark hickories, chestnuts, Carpathian and Persian or English walnuts and eastern black walnuts. Mr. Corsan had several large seedling black walnuts of the Thomas variety bearing large, Thomas-like nuts, indicating this variety does reproduce many of its good qualities in its seedlings.

Mr. Corsan's plantings are in open woodland formation, with heavy mulch about the trees. Those interested in this method should note the recommendations of Mr. Van Haarlem of the Horticultural Experiment Station, Vineland, Ontario, which will appear in our annual report for this year.

New officers for the year are: President, John Davidson, Xenia, Ohio; Vice President, Dr. L. H. McDaniels, Ithaca, N.Y.; Treasurer, D. C. Snyder, Center Point, Iowa; and Secretary, J. C. McDaniel, Tennessee Department of Agriculture, 403 State Office Bldg., Nashville 3, Tennessee. *—Mildred M. Jones, Retiring Secretary, Northern Nut Growers Assn. Inc., P.O. Box 356, Lancaster, Pa.*

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THE LOW-DOWN

(*Continued from page 27*)

in the southern Scandinavian peninsula gives added promise that it might become a practical tree for American commercial orchards. Its one drawback seems to be its susceptibility to low temperatures. This need not be considered too serious a fault, especially in the northern limits, for root killing is seldom a problem, and the body of the trunk exposed to cold is of a chosen variety.

In Europe, most apples are grown on clonal roots and growers are as careful in choosing the underground part of a tree as they are in choosing the variety itself. However, European agriculture is an intensive operation, each tree receiving individual attention; whereas United States agriculture is an extensive operation, trees being regimented to general, over-all treatment, for growers have no time to give individual trees attention. Americans therefore require more rugged, self-sufficient trees than do Europeans.

For obvious reasons, fruit growers desire uniform trees in their orchards, but iregularities continue to occur. Many variations have been attributed to the seedling understocks for, having been grown from seeds, no two are exactly alike.

It was expected when clonal rootstocks such as the Mallings were introduced, that uniformity would be attained, because such roots, being parts of an original plant, are exactly alike genetically. Experience has disillusioned these optimists for in actual orchard practice, trees on these clonal roots have shown themselves to be more variable than those on seedling roots. This emphasizes the importance of environmental factors. Since Malling clonal roots are more sensitive to soil variations than seedling roots, and soil variation is so great within each orchard, differences in reaction to soil becomes as great a factor in tree variations as differences in seedling rootstocks. In fact, the sensitivity of trees on clonal roots actually maps out an orchard's soil conditions.

Fortunately, experimental work has already been done showing the adaptability of some rootstocks to particular soils. For example, M XIII will adapt itself to heavy soil, and M XII shows better performance in light soil. Growers themselves could, with the help of local experiment stations, ascertain their own

(*Continued on page 35*)

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FRUIT TREES, NUT TREES, BERRY PLANTS, AND Ornamental Plant Material—offered by Virginia's largest Fruit Tree Growers. Write for Free Copy Planting Guide. WAYNESBORO NURSERIES, Waynesboro, Virginia.

ORCHARDS FOR SALE

111 ACRES. 50 ACRES BEARING APPLES AND Pears. 2 large dwellings, barn and storage cellar. Balance of land is well adapted for fruit. Owner is compelled by illness to sell this farm. Prospective crop is good. Immediate possession, priced under $30,000.00 crop included. Write DON BYERS, Clyde, Ohio.

FOR SALE: TO CLOSE AN ESTATE. 375 A. WAGNER orchards and hunting grounds, Henry, Illinois. 200 A. fronting river with 7 room house, 2 baths, 55 A. Apple trees, cold storage for 10,000 bushels. Additional 6 room house, 2 large barns, necessary Machinery and Equipment. River cottage and hunting rights rent $1200.00. Inspect and make offer. HOBBS AND GRUBB, Exclusive Agents, State 4212, 120 S. LaSalle Street, Chicago, Illinois.

120 ACRES—FRUIT AND DAIRY FARM. 7 ACRES peaches, 28 acres apples, good varieties. Fine modern home, barn, other buildings. In lake region, prosperous farming area, and near markets. 30% down. Inquire—WILL-SELL REALTY SALES, LaGrange, Indiana.

PATENTS

NATIONAL TRADE MARK COMPANY, MUNSEY Building, Washington, D. C.

POULTRY

PEAFOWLS, REISER FRUIT FARM, HARPSTER, Ohio.

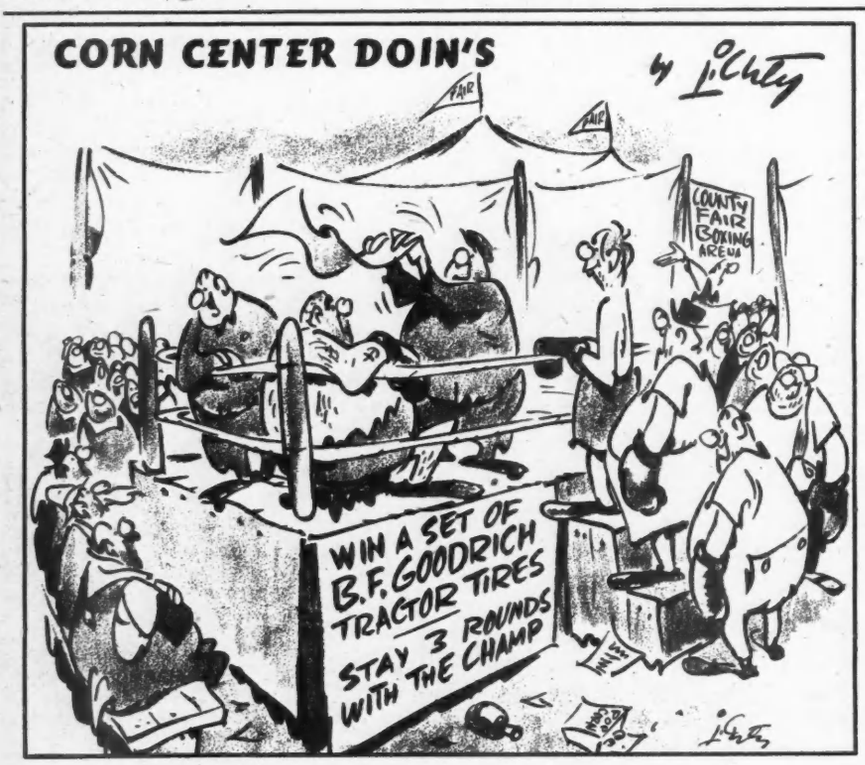
RABBITS

PEDIGREED NEW ZEALAND WHITES AND HWT. Chinchilla rabbits 2 to 3 mo. Bucks $2.50, Does $3.00 over 3 mo. Bucks $5.00, Does $6.00. MRS. URIAS KINSINGER, Route 1, Salisbury, Pa.

RAISE GIANT CHINCHILLA RABBITS. YEAR ROUND income. Ideal occupation. Tremendous demand for gorgeous furs, delicious meat. Great scarcity means large profits. We buy your youngsters. WILLOW FARM, RD2, Sellersville, Pa.

RHUBARB

ATTENTION NURSERYMEN! RHUBARB — MacDonald and Canada Red divisions. Buy them from the largest propagators in Canada. State quantity required for fall delivery. PHILLIPS FARMS, Chateauguay Village, Que., Canada.


CORN CENTER DOIN'S
by L. Clay
FAIR
COUNTY FAIR BOXING AREna
WIN A SET OF B.F.GOODRICH TRACTOR TIRES
STAY 3 ROUNDS WITH THE CHAMP

"The Champ really has to work since farmers voted 2 to 1 for the B.F.Goodrich kind of tread"

You can be sure there's a mighty strong reason for farmers everywhere voting 2 to 1 for the open type tractor tread. That reason is *more traction!* The B. F. Goodrich open tread gives more traction because the husky, double cleats are unconnected; bite the soil easily, grip firmly. And the open center means no pockets to hold mud or dirt—no pockets to clog and rob you of traction. You always get full power, full traction on B. F. Goodrich tractor tires. When you need tires, get B. F. Goodrich . . . get the type tread farmers prefer *two to one!*

An advertisement of The B. F. Goodrich Co., Akron, Ohio

Trampling Out the Vintage

By Joseph A. Cocannouer

A powerful story of farming on poor overworked and eroded soil. The tragedy of creatures of habit and custom who refused to accept modern soil management and to their own ultimate destruction is the theme of this inspiring and interesting book. Joe Cocannouer, the author, is the Father of our present system of teaching vocational agriculture in our public schools. Many families which the author describes have their counterparts in every agricultural community. No one can read this book without becoming a better farmer and converting the bitter vintage of grapes into sound and mellow fruit.

Sent postpaid on receipt of $2.75

AMERICAN FRUIT GROWER

1370 Ontario Street, Cleveland 13, Ohio

THE LOW-DOWN

(Continued from page 33)

soil conditions and chart their orchard plantings accordingly.

Perhaps in northeastern United States, where orchards are smaller, it would be economical for orchardists to investigate the possibility of apple trees dwarfed on clonal roots, being aware of their weaknesses, but overcoming these by cultural practices, with the reward of earlier, heavier crops.

Recently, in the northern edge of apple production, where winter injury to the trunk is a problem, and that is not always in the coldest areas, orchardists are double-working their trees to interstocks such as Virginia Crab, Hibernal, and Robusta to form hardy frameworks. Experimental data indicates that varieties top-worked on Virginia Crab, fruit earlier than the same varieties on seedling roots and do not become as large. An apple tree with an M VII rootstock, a Virginia Crab body, that is trunk and scaffold limbs, and McIntosh, Northern Spy or other desired variety forming the fruiting area, is a chimera that may extend successful apple growing further north and may make present apple regions more productive.

It must be remembered that it takes 40 years to study the life of an apple tree for reliable data, so some of the conclusions drawn from observations of younger plantings may have to be revised as the trees grow older. However, in the light of data now available, it would seem that those desiring quick returns on investments in orchards should consider combining a Malling type rootstock with the scion variety, and in some cases with the bodystock, best suited to the environmental conditions in their own orchards and to their market demands.

APPLE TREES

We offer a wide selection of popular varieties in both 1 yr. and 2 yr. trees, 2 to 3 ft. and 3 to 4 ft. in height.

Cortland
Delicious, Dark Red
Delicious, Yellow
Duchess
Duchess Dark Red
Grimes Golden
Jonathan
Jonathan Dark Red
McIntosh Dark Red
N. W. Greening
Red June
Stayman Dark Red
Turley
Wealthy
Yellow Transparent

Write us for prices giving us the quantities and varieties you are needing.

LAKE'S SHENANDOAH NURSERIES
Shenandoah, Iowa
One of America's Largest Nurseries Since 1870

J. B. West & Son
MAPLE-BEND NURSERY
FRUIT TREES — SMALL FRUIT PLANTS
ORNAMENTAL TREES AND SHRUBS
PERRY, OHIO.

FRUIT TREES and ORNAMENTALS
Offered by Virginia's Largest Growers. Write for Free Copy Our New Planting Guide listing more than 900 Varieties of Choice Fruits, Nuts and Ornamentals.
WRITE FOR FREE CATALOG
WAYNESBORO NURSERIES
WAYNESBORO VIRGINIA

High Quality Nursery Stock for FRUIT GROWERS
Apples — Cherries — Grapes
Pears — Plums — Currants
Peaches — Apricots — Berry Plants
Quotations Furnished Any Time
WILLIS NURSERY CO., Dept. A, Ottawa, Kansas

IMPROVED, GRAFTED NUT TREES
Also save your fruit, plant mulberries for birds—select Honey Locust for deer. Nut Trees, Persimmons, American & Chinese, Blueberries. List free. Descriptive bulletin 25c. Nut Tree Nurseries, Box 65C, Downingtown, Penna.

GRAFTWAX TREE HEALANT
Since 1920—excels in grafting and budding; cures tree and plant wounds, blights, and other diseases and fer cavities. Repels rodents, ants and other pests. Adhesive, waterproof. IT SEALS AND HEALS, SMEAR ON COLD. 1 lb. 75c—2 lbs., $1.30—6 lbs., $3.65—12 lbs., $6.00 postpaid. Free sample.
CLARION DEVELOPMENT CO. Dept. A. Clarion, Pa.

HUNT'S GRAFTING WAXES, RODENT REPELLENT, ETC.
M. J. Beck Co., Box 7, Lansing 1, Mich.

FRUIT TREES Planters Grades at Planters Prices. Peach, Apple, Pear, Plum and Prune, Cherry. Write for Prices. Drop a card for Free copy of our catalog.
CHAMPION NURSERIES
150 MAIN STREET • PERRY, OHIO

STATEMENT OF THE OWNERSHIP, MANAGEMENT CIRCULATION ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946.

OF AMERICAN FRUIT GROWER, published monthly at Cleveland, Ohio, for October 1, 1947.
STATE OF OHIO } ss.
COUNTY OF CUYAHOGA }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared E. G. K. Meister, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the AMERICAN FRUIT GROWER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily, weekly, semiweekly or triweekly newspaper, the circulation, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (section 537 Postal Laws and Regulations) printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, American Fruit Grower Publishing Company, 1370 Ontario St., Cleveland, Ohio; Editor, R. T. Meister, 1370 Ontario St., Cleveland, Ohio; Managing Editor, None; Business Manager, E. G. K. Meister, 1370 Ontario St., Cleveland, Ohio.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) American Fruit Grower Publishing Company, 1370 Ontario St., Cleveland, Ohio; E. G. K. Meister, 1370 Ontario St., Cleveland, Ohio; R. B. Campbell, Richmond, Virginia.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is. (This information is required from daily, weekly, semiweekly and triweekly newspapers only.)

E. G. K. MEISTER,
Business Manager.

Sworn to and subscribed before me this 5th day of September, 1947.
(Seal)
H. WILLKOM, Notary Public.
(My commission expires Nov. 24, 1947)

KEN SPRAY GUNS
HIGH PRESSURE INSECTICIDE SPRAY GUNS
NOZZLES AND ACCESSORIES

KEN M-2 DOUBLE GUN
$12.50
Wt. 3 lbs. 14 ozs. Full cone adjustable long and short spray. Removable handle and rod assembly for clean-out. Low cost repair and operating. Shuts off at the head.

KEN M-21 SINGLE GUN
$9.35
Wt. 3 lbs. Same high quality and workmanship as Ken M-2 double gun, including clean-out feature, head shut off and others. The perfect single gun for low and high pressure.

$6.00
KEN M-9 VALVE OR ROD CUT OFF

IF THERE IS NO LOCAL DEALER SEND DIRECT TO
KEN STANDARD CORP.
1401 N. Fares Ave. Evansville, Ind.

MALONEY

Plant hardy, Northern Grown CHERRY TREES this Fall. Maloney Supervision Guarantees Satisfaction. Write for FREE Color Catalog—FRUIT TREES, BERRIES, GRAPES, SHRUBS and BULBS. Our 63rd year.
MALONEY BROS. NURSERY CO., INC.
15 Circle Rd., Dansville, N. Y.

FARMERS WHOLESALE NURSERY
PAUL PATTERSON, Owner
A dependable source for true-to-name fruit trees. We specialize in commercial accounts, and exercise every care in keeping our varieties straight.
Write for prices.
P.O. Box 65 Smithville, Tennessee
You Get What You Buy

Kelly FRUIT TREES
for Fall and Spring Delivery
We are one of the largest growers of Fruit Trees and supply Quality True-to-Name Trees at fair prices. Send today for our 1947 catalog. Good fruit trees continue to be scarce. Order early to avoid disappointment. Satisfaction Guaranteed. Our 67th Year.
KELLY BROS. NURSERIES, INC.
155 Maple Street Dansville, N. Y.

Ramblings OF A HORTICULTURIST

The Hudson Valley

CENTURIES ago, before primitive man learned the first arts of civilization, the Great Ice Sheet ground its way down over what we now know to be the North American continent. It covered only the northern portion, gouging its way to engulf an area that now comprises many of our northern United States.

What this area was like before the Ice Age we cannot accurately tell, but the important thing to us is that this great glacial movement caused changes in soil, climate, vegetation, and animal life that are of real benefit to us today. Without this transformation, fruit production on this continent would be considerably different from what it is now, especially in the northeastern corner of the country.

Those who have visited New York and New England are aware of the rugged nature of the land where, sometimes, agriculture must cling desperately to almost barren rock. However, there are areas where crops do very well, especially in valleys and on benchlands. But even here, no more than a casual look at the rock-strewn soil reminds one of the powerful grinding force of the mighty glacier.

One of these ice-scoured valleys is the picturesque, historic Hudson, whose variety of horticultural pursuits is hardly matched in another area east of the Rocky Mountains.

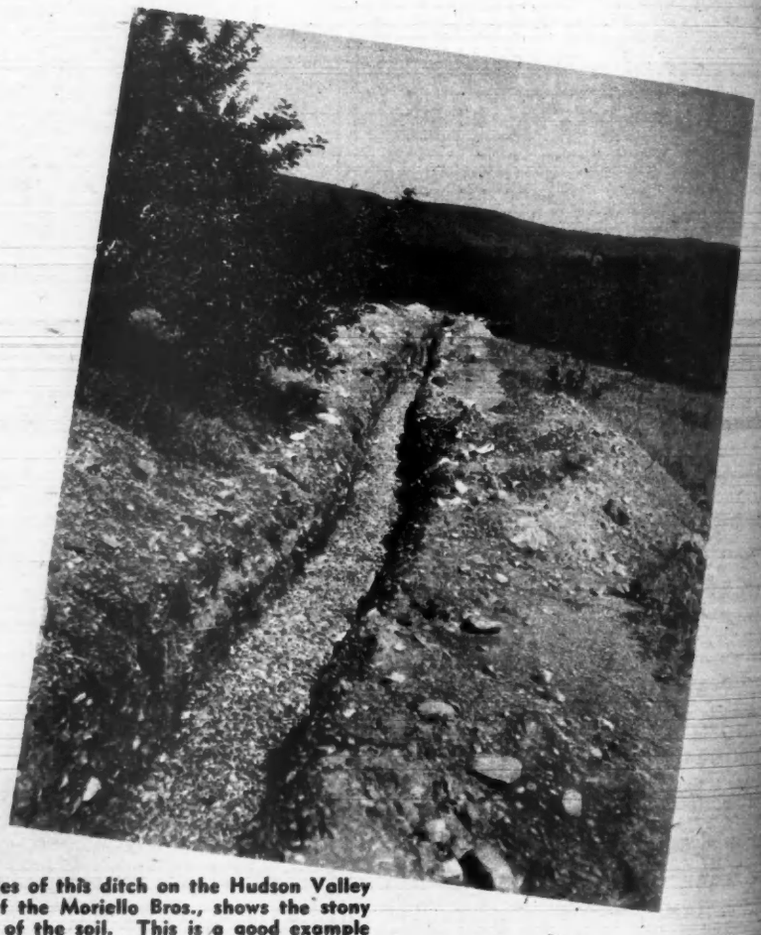
The most concentrated fruit growing area lies within a 50 mile stretch south of Kingston, New York, and it was here that your Rambling Horticulturist spent a few days seeing how some of the fruits are grown and cared for.

The agricultural region is not one big, broad valley massed with orchards, vineyards and berry plantations. The terrain of the land does not permit such a planned order to fruit growing. The landscape is very mountainous and irregular; consequently you must search out the valleys and terraces between forested ridges to find the productive orchards and diversified fruit farms.

The low mountain ridges, in general, extend in a north and south direction, parallel to the Hudson River, often dropping abruptly to the water's edge. Because of this steepness of the river's banks, commercial fruit production, for the most part, must be carried on in the narrow and irregularly surfaced valleys and benchlands to the east and west of the Hudson.

Practically the entire Hudson Valley area lies within the geologic boundary of the Slate Belt. This is a narrow strip, about 50 miles wide, extending from northeastern New Jersey to Vermont. Its name is derived from the fact that its soils are developed from weathered blue-gray slate. In places this parent rock is mixed with sandstone, limestone, and glacial till. Thus, although the soils of this area are similar, they vary in some respects, especially as to drainage and productivity. Much of the valley's eminence in fruit growing is possible because of the quantity of glacial till that is mixed with the slate and other soils. This till is a mixture of soils robbed from other regions and deposited by the ice sheet as it melted and receded.

Thus far, we have hardly touched upon the soil and geological development of the Hudson Valley and its relation to fruit growing, but we have discussed enough to show why one small area is gifted with such productivity as that of the Hudson Valley. Here we see the effect of the glacier in providing benchlands of rich soil on which can be grown a lusty crop to help feed a lusty, growing nation.—E.S.B.



Soil profiles of this ditch on the Hudson Valley orchard of the Moriello Bros., shows the stony character of the soil. This is a good example of the glacial till covering the valley floor; it is a heterogeneous mixture of stone and soil.

UNION PACIFIC

TREASURE MAP OF INDUSTRY

Wyoming

- VAST SUPPLY OF COAL, IRON AND PETROLEUM
- LEADING LIVESTOCK STATE
- TREMENDOUS WOOL CLIP
- IMPORTANT MARKETING CENTER OF POULTRY AND DAIRY PRODUCTS
- LARGE PRODUCER OF SUGAR BEETS, POTATOES AND GRAINS
- EXCELLENT TRANSPORTATION
- OUTSTANDING SCENIC AND RECREATIONAL ATTRACTIONS
- HEALTHFUL LIVING CONDITIONS

One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.

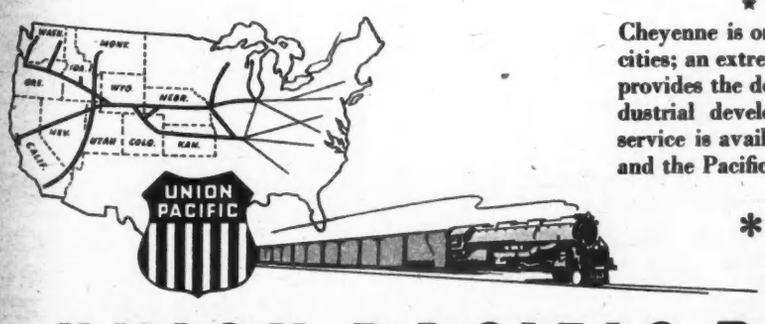
In Wyoming manufacturers will find a vast amount of raw materials. It is a leading state in potential mineral resources; produces great quantities of iron . . . has the world's largest untapped supply of coal. Copper, silver, gold, lignite and bentonite are among the mined metals and minerals. The State contains 27 oil fields and large timber lands.

Wyoming is one of the greatest of livestock States, producing fine beef cattle. Its wool clip is tremendous. Poultry raising and dairying are important activities. Principal crops are sugar beets, potatoes and grains.

The healthful climate . . . scenic and recreational attractions such as Yellowstone-Grand Teton National Park and scores of dude ranches . . . a fine educational system . . . are incentives to living in this western region.

★ ★ ★ ★

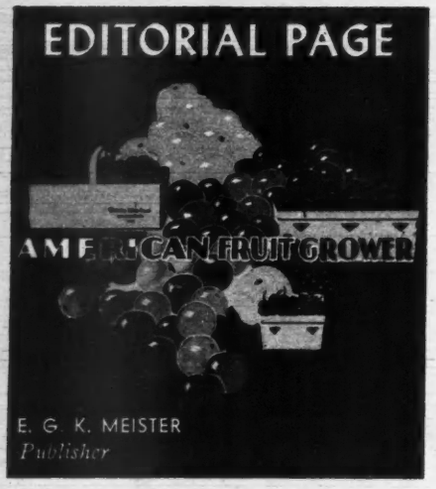
Cheyenne is one of the principal Union Pacific mainline cities; an extremely important point to the railroad which provides the dependable transportation so essential to industrial development. For travelers, daily Streamliner service is available from Cheyenne to and from Chicago and the Pacific Coast.



* *Address Industrial Department, Union Pacific Railroad, Omaha 2, Nebraska, for information regarding industrial sites.*

UNION PACIFIC RAILROAD

THE STRATEGIC MIDDLE ROUTE



National Advertising for Apples

THE BOARD of Directors of the National Apple Institute have made a noteworthy step forward in deciding at long last that the time is ripe for the first national advertising campaign for apples. Although this season's campaign will consist of only one advertisement, nevertheless a start will have been made and machinery will be established for larger campaigns to follow.

Funds for the advertisement will be provided by state and regional apple organizations on a voluntary basis. That these various organizations have been able to join hands for the common welfare of all growers is a tribute to their leaders who now are putting into operation long-range plans made when the National Apple Institute was first organized.

Every commercial apple grower in the United States will benefit from such national advertising. Many thoughtful growers are contributing to the advertising fund but it is the duty of all growers to observe the first principle of successful advertising—that it only pays to advertise a high quality product.

APS Birthday

MEMBERS of the great family of fruit growers are invited to a birthday party in St. Louis next February when the American Pomological Society will celebrate its first 100 years.

For APS the years have brought forth great leaders who have made outstanding progress in fruit growing. A. J. Downing whose selfless devotion helped form the APS, Marshall P. Wilder, first president of the APS, the Lewellings who brought horticulture to the Pacific Coast, Ephraim Bull, father of the Concord grape, Nicholas Longworth who brought the Concord to Ohio; all these and many more made possible the coming centennial celebration.

The meeting is sponsored by the Missouri and Illinois Horticultural Societies and in addition the National Apple Institute, American Society for Horticultural Science and the National Peace Council are assisting.

Oldest national agricultural organization in America, the APS will welcome its many friends to the Centennial.

Invest Wisely

MONEY is growing on trees in thousands of American orchards in the form of ripe fruit. When the crop is harvested this fall, many of the nation's fruit growers will have surplus funds to invest or to save.

To take the surplus from the fat years and put it away for the lean years is a sound principle. The wise grower will skim off the surplus and invest it against hard times.

One of the safest ways, and a way heartily endorsed by the AMERICAN FRUIT GROWER, is to buy U. S. Saving Bonds. For $375 paid for bonds now, the government will pay back $500 in ten years.

The investment is as sound as the American nation, and the interest rate is steady. Think it over, and put some of the money that comes from this year's harvest into bonds.

Fruit Production at a Glance

A NEW ADDITION to the editorial page appears in this issue. A table of fruit statistics will each month inform readers of the production of our leading fruits and will also give them a comparison with previous harvests. Such figures are not only interesting but valuable in analyzing markets and prices.

	1936-45	1946	Sept. 1 Est. 1947
Apples bushels	112,896,000	119,410,000	113,079,000
Peaches bushels	62,936,000	86,643,000	84,781,000
Pears bushels	29,510,000	34,447,000	34,583,000
Grapes tons	2,578,920	3,119,500	3,151,000
Plums and Prunes tons (fresh)	707,660	791,000	684,100
Cherries tons	159,157	229,620	183,000

CITRUS

	1935-44	1946-47	
Oranges boxes	78,470,000	113,010,000	
Grapefruit boxes	40,083,000	61,410,000	

Autumn

AUTUMN is the season of fulfillment, when the hopes, work and sweat of the past spring and summer are realized in the harvest of crisp apples, tender pears, and other fragrant fruit. It is a season when old Dame Nature herself spurs the grower on to busy activity in preparation for the winter. There is a snap and crackle to the frosty air that pushes him a little faster.

The harvest must be completed and the orchards cleaned of dead wood and windfall fruit, so that harmful insects won't have shelter for the winter and mice and other rodents will not be attracted. Poison baits must be laid for mice that may already be in the orchard, and protectors should be placed around the trees to prevent rabbit damage. Cover crops should be planted to help prevent winter rains from gullying and washing away the top soil. Buildings must be put in order and machinery and equipment sheltered, cleaned and repaired to insure against undue deterioration. Financial books must be set straight, and there are a hundred and one other things to do. At this time, with daylight hours declining, the grower feels the pressure of time and the need to work fast to utilize the few remaining favorable weather periods.

Yes, Autumn is the season of fulfillment, the season when the grower reaps what he has sown. If the fruit stock was good, his judgment wise, and his labor constant, the results are good. However, fall does not always bring a bumper crop.

In this season of fulfillment, the grower may be brought to realize that although man has propagated fine varieties, invented marvels of labor saving machinery, and discovered ever-improved methods of culture, he still does not have complete control over Nature. The winds still blow and tear his orchards, the rains may bring on scab, the frosts may kill the blossoms, and the hail may spoil the perfect fruit. He cannot regulate the sunshine with the click of a switch. There is still a power greater than he that grants a crop or no.

In face of this, a man is humble. But that is part of the fulfillment. He must learn to work with Nature, not against her. He must learn to help preserve her balance, not to tip it until vengeance tumbles about his head. Then, to him, Autumn will truly be the season of fulfillment!

Anytime is "HG" time

In any kind of weather, on any kind of going, the Oliver HG can go on working. Sand, mud or snow . . . hills, marsh or bottom land do not give you idle days when you have an HG.

The HG is a track tractor that is made for the farm—*it will handle row crops!* It comes in either 31, 42 or 68-inch tread widths, center-to-center, and has a full 20-inch clearance.

It's a great second tractor for the average two-tractor farm because it's an all-winter tractor. See your Oliver Dealer and ask him about the HG. The Oliver Corporation, 400 West Madison Street, Chicago 6, Illinois.

***OLIVER Track-Tractor* is an ideal "2nd tractor" on many farms. It can be fitted with a blade for erosion control, road maintenance or snow removal and with many other accessories.**

OLIVER

"FINEST IN FARM MACHINERY"

THE OLIVER CORPORATION

See Wonder Fruits in life color, life size

in Glorious FREE Art Book

72 PAGES...GIANT SIZE...OVER A FT. LONG!

BIG BOOK OVER A FOOT LONG

WORLD'S CHAMPION STARK FRUIT TREES

Get Costly DeLuxe Art-Paper Edition FREE—While They Last!

Most sought after of all fruit books! Hurry, use coupon! Mail Now!

ACTUAL COLOR PHOTOGRAPHS

SOME WEIGH FULL POUND

New STARKING Delicious (Trade-mark) Apple ½ size

Fabulous New STARK GOLDEN DELICIOUS (Trade-mark) Apple ½ size

New STARK GOLD and BURBANK BLACK GIANT SWEET Cherries ½ size

Super Fruit Tree developments amaze orchardists!

Burbank's Famous Red Flesh ELEPHANT HEART (Trade-mark) Freestone Plum 1½ size

Young Trees Bear Giant Size Fruit

Now Grafted on Double-Heavy root systems . . . then "fattened and strengthened"

Many Begin Bearing Fruit *at 3 Years Old*

Every tree propagated direct-in-line from Champion Parent Trees so they produce gorgeous fruit, extra-size fruit, or bear more bushels

Luther Burbank

The new fruit creations of Luther Burbank, World's Horticultural Wizard, are propagated and sold exclusively by Stark Bros.

You can now have fruit trees which are modern miracles of horticulture. They bear fabulous fruit of sensational size and extra lusciousness, often at unbelievably young ages—many bear when only 3 years planted. They are supreme specimens of these wonder varieties due to the way they are cultured and selected. They have amazed orchardists by the gorgeous fruit and the extra bushels they bear.

These apples, peaches, plums, cherries, pears, apricots, and grapes are triumphs of the horticultural wizards Burbank and Stark—propagated direct-in-line from the original Champion Parents. Many are so different from any other fruits that they have been awarded U. S. Patents. Also Trade-marks so you can be sure. They are so hardy they thrive almost anywhere farm crops grow . . . can be grown on as little as 20 feet square of ground.

The latest United States census of agriculture shows there are only one-third as many apple trees in U. S. orchards as in 1910 to supply health-giving fruit for 61,000,000 more mouths than there were back in 1910. In spite of the alarming fruit shortage health authorities are urging people to eat twice as much fruit. You can easily start growing your own fruit now.

Improved Fruit Easier to Grow

Experienced orchardists are swinging away from trees which require extra years of waiting. They simply make sure they buy from the Trade-mark and Patent owners to get improved varieties propagated direct-in-line from the original Champion Parent trees. These "Record-Bearing Strain" (Trade-mark) trees are sold only by Stark Bros.

Each Stark tree is "fattened" before it is dug—loaded with rich plant food elements from selected soils. This practically eliminates set-back from transplanting. Each tree is inspected five times by nursery experts to assure you the very cream of the crop—no runts or weaklings.

Like Doubling The Tree's Strength

Grafting is by Stark's Double-Heavy Root System Method using the entire, vigorous, undivided root system instead of just one piece of root from a yearling seedling as is often done. This costs us more, but gives the tree super-heavy roots to speed up growth and younger bearing—gives it years' head start.

Magnificent Color Photo Book Tells How Easy

Get new De Luxe Edition of the greatest color fruit book ever published. See how simple it now is to grow prize fruits, shrubs, and roses. Look at actual specimens in true-to-life size and color. These are fruits you can grow—pictured through the magic of new color photography. Beautiful pictorial ripening chart shows seasons when various varieties of fruits ripen—shows at a glance how to plan continuous succession of ripe fruits from early to late. Color photos of living fruit make selection easy. This big Book of World's Champion Fruit Trees, Shrubs, Roses sent you FREE, *while they last.*

Here Are Some Champions

This is America's opportunity to replace ordinary fruits with miracle fruits of Burbank and Stark. Stark Golden Delicious (Trade-mark),* supreme for young and heavy-bearing! Glorious new Queen of Quality of all yellow apples—unequalled in richest, juiciest flavor. The magnificent new Starking Delicious (Trade-mark)—King of all Red Apples—red all over weeks before ripening! See the new Hal-Berta Giant (U. S. Pat.) Peach, an enormous mid-season producer. The World's largest peach; some weigh 1 lb. each! Also hundreds of other famous Stark Fruit Trees, shrubs, and roses . . . all true-to-name and true-to-strain, and safe arrival guaranteed.

Check Coupon Now—Get Two Extra Books FREE

If you reply at once, we will also send: (1) a remarkable easy-to-follow new Fruit Planting Guide, and (2) new Home Landscape Booklet of sensational shrub and rose discoveries and how to use them to glorify your grounds. We send these two valuable books FREE with the big 72-page Stark Book of Champion Fruits showing new horticultural triumphs in life color. Tear out coupon now!

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